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ABSTRACT

A study ascertained training, retraining, consulting, and technical support needs of small manufacturing companies in Ohio. Data were obtained from nine service areas of Ohio's two-year educational institutions to determine what human, technical, and physical assets campuses should make available. A survey instrument was designed to provide separate data for management, supervisors, technical support, and other employees. Data from 519 companies indicated that the most requested need was for process change training, which included statistical process control, just in time, computer-integrated manufacturing, hazardous materials handling, and quality control. The five most frequent topic areas indicating needs for training, retraining, or consulting were as follows: (1) for managers--process change, management information systems, management, human relations and strategic planning; (2) for supervisors--management, process change, management information systems, human resource development, and communication; (3) for technical support employees--process change, human resource development, testing, systems maintenance, and management information systems; and (4) for other employees--process change, machine operation, technical systems operators, systems maintenance, and maintenance and set-up. The following were the top five areas requested by companies for technical support: statistical process control, hazardous materials, computer-assisted design, just in time, and computer systems. Recommendations for training programs were developed. (Appendixes include definitions and the survey instrument.) (YLB)

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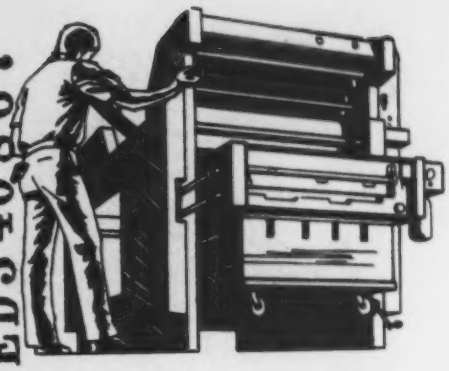
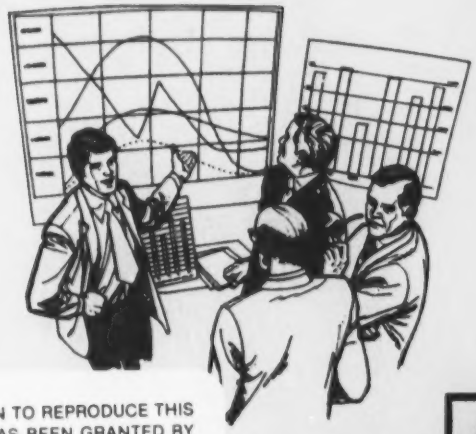


THE TRAINING, RETRAINING AND CONSULTING NEEDS OF SMALL MANUFACTURING COMPANIES IN THE STATE OF OHIO



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THE TRAINING, RETRAINING AND CONSULTING NEEDS OF SMALL MANUFACTURING COMPANIES IN THE STATE OF OHIO

FEBRUARY 1989

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The Training, Retraining and Consulting Needs of Small Manufacturing Companies in the State of Ohio

Abstract

The purpose of the study was to ascertain the training, retraining, consulting and technical support needs of small manufacturing companies in the State of Ohio. This study was prerequisite to the development of a marketing plan for the two-year colleges in the State of Ohio. The data were obtained from nine service areas of the state's two-year educational institutions. Data were obtained to determine what human, technical and physical assets Ohio's two-year campuses should make available to assist these small manufacturing companies.

Five hundred nineteen companies throughout the state completed the survey which was conducted using the interview method. The data have provided the necessary information for two-year campuses to identify target markets.

The data collection device was developed to ascertain the training, retraining, consulting and technical support needs of the subjects of this study. The survey instrument was designed to provide separate data for management, supervisors, technical support and other employees. The

questionnaire provided data about business functions such as finance, management, marketing and strategic planning as well as management information systems and health care systems. Technical areas such as process change, technical systems operators, systems maintenance and design were also included.

The data indicated the most requested area of need was for process change training which included statistical process control, just in time, computer integrated manufacturing, hazardous materials handling and quality control. The total number of requests indicating some to critical need for training, retraining and consulting in the area of process change was 1594.

The five most frequent topic areas indicating needs for training, retraining or consulting for managers were: process change, management information systems, management, human relations and strategic planning. For supervisors the five most requested areas were as follows: management, process change, management information systems, human resource development and communcation. The five most requested areas for technical support employees were: process change, human resource development, testing, systems maintenance and management information systems. The five most requested areas for other employees were: process

change, machine operation, technical systems operators, systems maintenance and maintenance and set-up.

The top five areas requested by the companies for technical support were: statistical process control, which was first by a large margin, hazardous materials, computer assisted design, just in time, and computer systems. Other services requested were co-op students, screening for employees, retirement planning, audio and video support and technical writing.

The total number of requests indicating some to critical need for training, retraining or consulting in all program areas was 18,181. This seems to indicate there is a large market for training, retraining and consulting programs developed by two-year campuses to serve the needs of small manufacturing organizations in the State of Ohio. The task is one of delivering, at a reasonable price, needed training, retraining and consulting programs indicated by the small manufacturing companies in the State of Ohio. This task will be difficult because of the possibility of a small number of employees in each company that could attend any given program.

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The Training, Retraining and Consulting Needs of Small Manufacturing Companies in the State of Ohio

This research was a descriptive study, using the survey/interview method to indicate the training, retraining, consulting and technical support needs of small manufacturing organizations in the State of Ohio. The study included only small manufacturing organzations with 10-250 employees located in the State of Ohio. The State of Ohio was divided into nine areas with an area coordinator appointed to facilitate meetings and distribute the surveys. Meetings were held at a convenient location and a representative from all two-year campuses was requested to attend these meetings. Nine of these meetings were held and a training session was conducted to demonstrate the technique to use in the administration of the surveys. Five hundred nineteen (519) surveys were received from throughout the state by the end of October 1988.

Once the data were collected, each questionnaire was tabulated and frequencies and percentages were calculated and cross tabulation performed. The statistical program SPSSX was used to compile this information. The emphasis was not on comparison between areas but on the identification of the needs by groups, with some interrelationships presented.

Responses 1-21 produced demographic data about the organizations that participated in the survey. Questions 22-41 represent data obtained from organzations that selected categories of some need, a lot of need, and/or critical need for specific types of training, retraining or consulting for managers, supervisors, technical support employees and other employees. Questions 42 and 43 focused on technical support needs and other services that may be of interest to the small manufacturing companies. Questions 44-47 yielded more information about current needs in the areas of training and possible future programs.

Five hundred and fifty-eight surveys were requested from the nine areas of the state. Several institutions completed more than they were assigned and several did not complete any surveys or less than they were assigned. The following table demonstrates the response from the areas.

Table 1

Area Institutions Response to Survey

Area	1	2	3	4	5	6	7	8	9	total
	32	49	80	76	56	87	49	30	60	519

The areas were numbered as follows: (1) Lima, (2) Toledo, (3) Cleveland, Youngstown, (4) Springfield, Hamilton, (5) Central Ohio (6) Canton, Akron, (7) Cincinnati, (8) South Central Ohio, (9) Zanesville to Salem. The total number of surveys received was 519.

The surveys were coded into a two digit number of the Standard Industrial Classification Code. Five hundered and seventeen of the surveys received had the two digit code included. The surveys received were from the following two digit classification:

Table 2

Standard Industrial Classification

Classification/Number		Classification/Number		Classification/Number	
11	1	12	1	14	1
20	17	21	1	22	4
23	4	24	10	25	5
26	9	27	13	28	24
29	5	30	49	31	2
32	19	33	32	34	116
35	119	36	43	37	17
38	9	39	10	43	1
50	5	67	1	76	1
There were 2 non-respondents		Total	517		

The compilation of the number of companies in various employee size categories are reported in Table 2 following (from question #1 and #2).

Table 3 Question 1, 2

How Many Employees are on your Payroll at this Location?

	Area 1	2	3	4	5	6	7	8	9	State Total
0										
5 yrs. ago	2	3	2	5	2	3	1	4	5	27
Percentage	4.2	6.3	4.2	10.4	27.1	22.9	14.6	10.4		9.3
10-25										
Current	3	8	10	22	5	15	6	7	20	96
Percentage	3.1	8.3	10.4	22.9	5.2	15.6	6.3	7.3	20.8	18.5
5 yrs. ago	5	9	17	32	7	21	7	7	27	132
Percentage	3.8	6.8	12.9	24.2	5.3	15.9	5.3	5.3	20.5	26
26-50										
Current	5	7	17	22	5	18	6	3	13	96
Percentage	5.2	7.3	17.7	22.9	5.2	18.8	6.3	3.1	13.5	18.5
5 yrs. ago	6	8	15	13	12	13	8	3	7	85
Percentage	7.1	9.4	17.6	15.3	14.1	15.3	9.4	3.5	8.2	16.8
51-100										
Current	8	12	25	14	14	16	9	6	13	117
Percentage	6.8	10.3	21.4	12	12	13.7	7.7	5.1	11.1	22.6
5 yrs. ago	6	15	24	16	7	15	10	4	14	111
Percentage	5.4	13.5	21.6	14.4	6.3	13.5	9	3.6	12.6	21.9
101-200										
Current	10	15	22	13	13	22	16	7	11	129
Percentage	7.8	11.6	17.1	10.1	10.1	17.1	12.4	5.4	8.5	24.9
5 yrs. ago	10	8	16	6	16	19	16	7	3	101
Percentage	9.9	7.9	15.8	5.9	15.8	18.8	15.8	6.9	3	19.9
201-250										
Current	4	3	4		6	5	5	2	3	32
Percentage	12.5	9.4	12.5		18.8	15.6	15.6	6.3	9.4	6.2
5 yrs. ago	1	5	6	4	9	11	6	4	4	50
Percentage	2	10	12	8	18	22	12	8	8	9.9
250+										
Current	2	3	2	5	13	11	7	5		48
Percentage	8.3	11.1	7.4	20.8	8.3	12.5	4.2	16.7	20.8	5.3
Current Total	32	48	80	76	56	87	49	30	60	518
5 yrs.ago	30	48	80	76	53	82	48	29	60	506

Note. There was one current non-respondent and twelve non-respondents on 5 years ago data.

There were 27 respondents that did not exist five years ago and each employee size category demonstrated growth with the movement of 48 companies into the 250+ employee category. Generally there was a modest movement in all nine of the areas in the state.

The small companies with 10-25 employees had 96 respondents (18.5%). The category of 26-50 employees had 96 organizations (18.5%) which responded. The employees with 51-100 had 117 (22.6%) respondents. Companies with 101-200 employees had 129 respondents (24%). The category of 201-250 employees had 32 (6.2%) respondents and we had 48 respondents (9.3%) with 250+ employees. The total number of respondents was 518.

Table 4 Question 3, 4

The Percentage of Change in Employee Numbers during the Past Five Years

Area	1	2	3	4	5	6	7	8	9	State Total
Reduction	3	8	9	9	2	10	2	2	4	49
0% change	5	15	30	21	15	28	22	8	17	161
25% change	7	8	13	17	17	28	12	7	11	120
50% change	4	6	12	10	6	7	5	2	8	60
75% change	1	1		6	3	1	2	1	3	18
100% change	5	8	14	12	7	7	4	7	13	77
Total	25	46	78	75	50	81	47	27	56	485

Note. There were 34 non-respondents.

Only 49 organizations (10%) reduced the number of employees in the past five years with 90% of the organizations having an increase in the number of employees from 25 to 100%. The top reasons for this change were increased sales with 166 respondents, new markets with 58, expansion 58 and technological changes with 50 respondents.

Table 5 Question 5

The Projected Number of Employees in the Next Five Years

Area	1	2	3	4	5	6	7	8	9	State Total
10-25 employees	2	3	7	10	4	8	6	6	14	60
26-50 employees	3	9	10	26	3	19	6	1	12	89
51-100 employees	8	12	26	19	13	18	7	4	20	127
101-200 employees	11	13	23	11	14	18	15	8	7	120
201-250 employees	2	4	8	4	6	10	5	5	5	49
250+ employees	5	6	5	6	16	14	9	6	2	69
Total companies	31	41	79	76	56	87	48	30	60	514

Note. There were five non-respondents.

In the next five years there was a reduction in the number of organizations with 10-25 employees and also 26-50 employees. This can be expected because the upper categories have increased. This seems to project a moderate increase in employment in the next five years across the state.

Table 6 Question 6, 7

The Percentage of Change in Expected Employment

	Area 1	2	3	4	5	6	7	8	9	State Total
Reduction			4	1	4	4	1			14
0% change	9	15	25	23	23	28	24	14	24	185
25% change	9	26	25	35	21	47	14	6	22	205
50% change	3	3	12	6	3	4	5	1	6	43
75% change	1		1	5		1		1	2	11
100% change	3	2	10	5	3	1	3	5	2	34
Total companies	25	46	77	75	54	85	47	27	56	492

Note. There were 27 non-respondents.

Two hundred five organizations predict a 25 percent increase in employees the next five years with only 14 (2.8%) predicting a reduction. This indicates a moderate increase predicted in each category and again the top reasons for employment change were increased sales with 214 respondents, new products and services with 95, new markets with 68 and technological change with 55 respondents.

Table 7 Question 8

Is an Outplacement Program Needed for Displaced Employees?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes		1	4		1		2	2	1	11
No	18	32	40	39	31	50	33	12	33	288
Total companies	18	33	44	39	32	50	35	14	34	299

Note: There were 220 non-respondents.

There were 11 companies across the state that need an outplacement program. Four are located in area 3. This seems to indicate a very small need to develop outplacement programs.

Table 8 Question 9

Percentage of Workforce Unionized

Area	1	2	3	4	5	6	7	8	9	State Total
1-25%		1	1	4	1	1	2			10
26-50%	1	1	3	1	2	4	9	1	1	23
51-75%	3	7	14	6	6	12	6	4	5	63
76-100%	9	13	18	5	17	18	2	10	19	111
0%	19	27	42	60	30	50	30	15	35	302
Total companies	32	49	78	76	56	85	49	30	60	515

Note: There were 4 non-respondents.

Across the State of Ohio there were more small manufacturing companies that were not unionized. Two hundred seven had some union workers while 302 had no unionized workers.

Table 9 Question 10

Companies that are Part of a Multi-Unit Firm

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	17	27	31	22	40	47	20	17	23	244
No	14	22	47	53	15	40	29	12	37	269
Total companies	31	49	78	75	55	87	49	29	60	513

Note: There were 6 non-respondents.

Two hundred and forty-four of the 513 companies across the state responding to this question were part of a multi-unit firm.

Table 10 Question 13

Will Planned Capital Investments Impact Your Workforce In 5 Years?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	22	27	49	39	25	55	19	16	29	281
No	7	22	28	37	29	31	30	13	28	225
Total companies	29	49	77	76	54	86	49	29	57	506

Note: There were 13 non-respondents.

In area 1, 75.9% of the companies surveyed were planning capital investments that would impact their workers. This was followed by area 6 and 3 with 64 and 63%. Across the state 55.4% of the companies responding will have capital investments that impact their workers.

Table 11 Question 13B

Will You Need Retraining Programs Due to Investment?

	Area 1	2	3	4	5	6	7	8	9	State Total
Yes	18	20	28	20	15	25	11	10	13	160
No	10	17	33	29	20	46	22	11	29	217
Total companies	28	37	61	49	35	71	33	21	42	377

Note: There were 142 non-respondents.

There were 160 companies that will need retraining programs for the employees that will be displaced due to capital investment. Across the state this results in 42.1% of the companies surveyed.

Table 12 Question 13C

Will You Need an Outplacement Program for Displaced Workers?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	1	1	4	1	2	1		1	1	12
No	26	33	52	46	28	60	31	17	30	323
Total companies	27	34	56	47	30	61	31	18	31	335

Note: There were 184 non-respondents.

Only 12 companies reported the need for an outplacement program of the 519 surveyed. This has not been indicated as a high priority program to be developed.

Table 13 Question 14

There are Major Technological Innovations on the Horizon in Industry that Might Affect Your Organization. Do You Think Any of the Following Innovations Will Impact Your Company?

	Yes	No	Not Sure	More Info.	Total
Fabrication & Assembly	230	187	47	5	469
Information & Quality Ctl.	365	86	24	5	480
Materials & Handling	215	193	53	5	466
Product Design	264	158	39	11	472
Prod. Plan/Engin.	294	130	33	5	462
CAD, CAM, CIM, CAE	277	138	46	7	468
Vision/Insp. System	196	190	59	6	451
Biotechnology	19	377	33	11	440
Waste Management	184	237	29	7	457
Organizational Development	232	160	51	9	452
Manufacturing Management (strategy, team mgmt. & organization, bus. practices)	302	110	48	9	469

Note. Average response was 462 organizations.

The innovation that received the highest number of yes responses (365) was information and quality control. This was followed by manufacturing management with 302 responses. Product planning and engineering was third with 297 responses followed by CAD, CAM, etc. with 277 responses. The fifth highest response was for product design. Since

these are recent innovations, the relatively small number of responses in the not sure column and need more information may be of interest.

Table 14 Question 14-1

The Responses for Fabrication and Assembly by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	17	26	37	32	22	34	31	10	21	230
No	9	15	31	30	22	40	12	8	20	187
Not sure	4	3	8	5	5	10	1	6	5	47
More information		1	1	1			1		1	5
Total companies	30	45	77	68	49	84	45	24	47	469

Note: There were fifty non-respondents.

Table 15 Question 14-2

Responses for Information and Control/Quality by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	25	40	62	48	41	60	34	23	32	365
No	4	5	13	17	7	15	10	2	13	86
Not sure	1	1	4	5	5	6	1		1	24
More information			1	2		1			1	5
Total companies	30	46	80	72	53	82	45	25	47	480

Note: There were 39 non-respondents.

Table 16 Question 14-3

Responses for Materials Handling by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	15	21	40	19	21	36	22	16	25	215
No	11	16	28	37	18	39	19	6	19	193
Not sure	4	6	10	9	7	7	3	2	5	53
More information		1		1	1	1			1	5
Total companies	30	44	78	66	47	83	44	24	50	466

Note: There were 53 non-respondents.

Table 17 Question 14-4

Responses for Product Design by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	19	29	45	41	20	45	27	15	23	264
No	7	12	25	20	22	28	16	10	18	158
Not sure	2	3	8	7	4	9	2		4	39
More information	2	3		2	2	1			1	11
Total companies	30	47	78	70	48	83	45	25	46	472

Note: There were 47 non-respondents.

Table 18 Question 14-5

Responses for Production Planning/Engineering by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	23	30	55	34	29	50	28	16	29	294
No	6	10	16	26	15	27	15	4	11	130
Not sure	2	6	6	5	1	5	1	2	5	33
More information			1	1	2				1	5
Total companies	31	46	78	66	47	82	44	22	46	462

Note: There were 57 non-respondents.

Table 19 Question 14-6

Responses for CAD, CAM, (CIM) and CAE by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	18	29	45	43	24	45	30	13	30	277
No	8	12	22	21	17	29	11	6	12	138
Not sure	3	3	7	7	5	7	4	4	6	46
More information	1		1	2	1	1		1		7
Total companies	30	44	75	73	47	82	45	24	48	468

Note: There were 51 non-respondents.

Table 20 Question 14-7

Responses for Vision/Inspection Systems by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	17	20	37	28	18	34	15	12	15	196
No	10	19	29	32	16	38	19	6	21	190
Not sure	3	5	7	7	9	10	6	4	8	59
More information			1	1	2		2			6
Total companies	30	44	74	68	45	82	42	22	44	451

Note: There were 68 non-respondents.

Table 21 Question 14-8

Responses for Biotechnology by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	4	1		1	1	.5	2	3	2	19
No	23	34	65	55	39	71	38	15	37	377
Not sure	3	5	5	4	3	4	2	3	4	33
More information		3	1	4	1	1	1			11
Total companies	30	43	71	64	44	81	43	21	43	440

Note: There were 79 non-respondents.

Table 22 Question 14-9

Responses for Waste Management by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	14	18	30	21	22	35	17	15	12	184
No	13	24	37	37	22	43	26	5	30	237
Not sure	4	2	4	4	3	5		3	4	29
More information			1	4			1	1		7
Total companies	31	44	72	66	47	83	44	24	46	457

Note: There were 62 non-respondents.

Table 23 Question 14-10

Responses for Organizational Development by Area

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	18	22	42	24	25	47	18	15	21	232
No	9	16	24	34	13	25	13	4	22	160
Not sure	3	5	9	5	5	8	10	4	2	51
More information			1	3	2	2	1			9
Total companies	30	43	76	66	45	82	42	23	45	452

Note: There were 67 non-respondents.

Table 24 Question 14-11

Responses for Manufacturing Management, Strategy, Team Management

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	22	33	52	34	34	53	26	19	29	302
No	6	8	18	23	6	21	13	3	12	110
Not sure	1	4	5	10	7	8	5	1	7	48
More information			2	3	1	1	1	1		9
Total companies	29	45	77	70	48	83	45	24	48	469

Note: There were 50 non-respondents.

As illustrated by the 11 tables for this question the general state-wide response demonstrated the companies were going to use the majority of the technologies mentioned and very few needed more information about the technologies.

Table 25 Question 15

Does Your Company Have a Tuition Reimbursement Program?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	20	32	39	47	34	55	37	17	22	303
No	8	15	36	27	18	27	11	11	37	190
Total companies	28	47	75	74	52	82	48	28	59	433

Note: There were 26 non-respondents.

Most of the areas of the state reported a two to one margin for tuition reimbursement with the exception of area 3 and area 9. Area 9 reported there are more companies that do not have a program for reimbursement. Sixty-six of the 190 companies that reported no tuition reimbursement were in the catagory of 10-25 employees.

Three hundred and fifteen companies reported they had between a 25 and 100% tuition reimbursement plan. Two hundred and forty one reported 100%. Thirty eight had 75%

and 33 reported a 50% tuition reimbursement plan as reported in Table 26.

Table 26 Question 15B

What Percentage of the Cost Does the Reimbursement Cover?

Area	1	2	3	4	5	6	7	8	9	State Total
25%		1		1			1			3
50%	1	2	7	6	1	7	5	2	2	33
75%	2	7	4	8	3	5	7	1	1	38
100%	20	23	29	32	30	48	25	15	19	241
Total companies	23	33	40	47	34	60	38	18	22	315

Note: There were 202 non-respondents.

Table 27 Question 16

Does Your Company Have a Higher Turnover Rate With Entry-level Employees Than You Would Like?

	Area 1	2	3	4	5	6	7	8	9	State Total
Yes	11	15	26	27	21	24	10	7	17	158
No	21	34	52	49	35	63	38	21	43	356
Total companies	32	49	78	76	56	87	48	28	60	514

Note: There were 5 non-respondents.

One hundred and fifty eight companies have a higher turnover rate with their entry-level employees than they would like to have. Only 115 companies believe that prior training would reduce this turnover rate as reported in Table 28.

Table 28 Question 17

Do You Believe Prior Training in a Certain Field Would Reduce This Turnover Rate?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	6	11	27	20	12	13	10	6	10	115
No	20	28	33	40	29	50	22	10	28	260
Total companies	26	39	60	60	41	63	32	16	38	375

Note: There were 144 non-respondents.

Table 29 Question 18

Does Your Company Have a Formal Structure for Employee Training?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	17	22	26	30	26	44	14	14	23	216
No	14	27	53	45	27	40	35	14	36	291
Total companies	31	49	79	75	53	85	49	28	59	508

Note: There were 11 non-respondents.

Two hundred and sixteen of the 508 companies responding to the question of having a formal structure for training reported yes. Fifty nine of these companies employ 101-200 employees. The companies reporting that they did not have a formal structure for training totaled 291. Sixty nine of these companies employ 51-100 employees.

Table 30 Question 19

What Would You Describe the Training Needed By Your Employees?

Area	1	2	3	4	5	6	7	8	9	State Total
College credit	13	17	21	13	13	28	20	4	11	140
Basic studies	18	13	26	34	16	26	19	10	9	171
On the job	29	46	72	69	49	77	44	23	54	463
Custom training	22	28	33	35	32	51	24	16	21	262
Apprentice train.	18	19	45	30	18	36	12	6	22	206
Total responses	100	123	197	181	128	218	119	59	117	1242

Table 31 Question 19B

How Would You Descibe the Training Needed by Your Employees?

	Needed	Non-Respondents
College Credit	140	379
Basic Studies	171	347
On the Job Training	463	54
Custom Training	262	256
Apprentice Training	206	312

The employees surveyed described the training needed by their employees as first on the job training (465) followed by custom training (263) and apprentice training (206).

Table 32 Question 20

Would You Consider A Cooperative Arrangement With a College or University to Provide Instructional Programs for Your Employees?

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	16	30	31	25	25	33	17	13	16	206
No	6	4	15	19	9	20	14	4	18	109
Maybe	10	15	29	31	21	32	18	11	25	192
Morning	1	2	11	6	3	14	3	6	5	51
Afternoon	6	3	5	5	5	12	4	2	3	45
Night	14	24	34	38	24	27	19	7	28	215
Plant site	16	17	28	17	19	24	15	12	14	162
College	5	11	23	29	13	27	14	4	22	148
Neutral site		4	5	4	4	2			4	23

The question was asked: Would you consider a cooperative arrangement with a college or university to provide instruction programs for your current employees? There were 507 respondents to this question and 206 reported yes, 109 no and 192 maybe. This seems to indicate there is a major opportunity to establish these relationships. Employees also requested evening instruction (215). There was a split between offering the courses at the plant (162) or the college (148).

Table 33 Question 21

What Additional Incentives Does Your Company Offer Employees in Order That They May Pursue Further Education?

Area	1	2	3	4	5	6	7	8	9	State Total
Work-release	12	11	17	9	14	27	11	6	9	116
Salary/wage	13	19	27	18	14	28	13	5	19	156
Increased leader.	19	24	32	27	15	38	18	13	22	208
Child Care	1		1			1				3
Use of co. equip.	13	14	23	14	19	18	21	4	9	135
Mentorships	12	8	21	13	14	17	18	6	13	122
Job security	14	25	36	31	21	44	11	8	32	222

The top response was 222 for job security, increased leadership was second with 208. These two responses require little or no investment by the company. The category of salary and wage was the first category that would require additional investment in the individual and it received 156 responses.

Training, Retraining, Consulting Needs of Small Manufacturing Companies for Management, Supervisors, Technical Support Employees and Other Employees

The following tables present the data obtained by suggesting specific topics of training, such as marketing, finance, etc. The first set of tables for each topic represent the need for training, retraining and consulting services for management, supervisors, technical support and other employees. The second set of tables represent the choices of some need, a lot of need and critical need in marketing, finance, etc. across the nine areas of the State of Ohio. The third set of tables for each question represents training, retraining and consulting by the size of the company for each of the nine state areas.

The areas of the State of Ohio were numbered as follows: (1) Lima, (2) Toledo, (3) Cleveland, Youngstown, (4) Springfield, Dayton, Hamilton, (5) Columbus and Central Ohio, (6) Canton, Akron, (7) Cincinnati, (8) Chillicothe and South Central Ohio, (9) Zanesville to Salem.

The companies were asked the degree of need from no need to critical need in the various areas such as marketing and finance. The data reported in these tables represent only those organizations that chose either 3 (some need) 4 (a lot of need), 5 (critical need) for training, retraining or consulting.

Table 34-36 reported the data obtained when the organizations were asked if they have a need in the area of finance.

The data in Table 34 reveal that management and supervisors received the highest number of requests for assistance in the area of finance. Area 6 received 23 requests for training for their management staff. Across the state, there were 719 responses from some to critical need on the topic of finance.

Table 34 Question 22

Do You Have A Need in the Area of Finance?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	12	10	20	16	13	23	8		14	116
Retraining	3	3	18	5	11	10	9	3	9	71
Consulting	6	6	24	15	9	11	13	5	10	99
Supervisors										
Training	13	4	20	12	14	19	8	5	12	107
Retraining	1	4	14	5	9	9	4		4	50
Consulting	1		5	5	5	6	4	2	2	30
Tech. Support										
Training	9	6	10	9	9	17	6	2	11	79
Retraining	1	2	14	4	6	9	3	2	4	45
Consulting		2	2	9	6	7	3	4		33
Other employees										
Training	5	1	9	5	7	11	6	2	6	52
Retraining		1	6	2	5	6	2	1	2	25
Consulting			1	1	3	3	1	3		12
Total responses	51	39	143	88	97	131	67	29	74	719
Custom program	7	10	13	11	17	14	8	2	11	93
Existing course	14	12	31	22	15	40	18	8	19	179

Table 35 Question 22

Do You Have A Need in the Area of Finance?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	29	22	78	61	55	78	37	24	57	441
A lot of need	16	16	48	21	37	42	22	4	10	216
Critical need	6	1	17	6	5	11	8	1	7	62
Total Responses	51	39	143	88	97	131	67	29	74	719
Total Companies	18	18	49	33	24	38	26	10	26	242

Table 35 demonstrated that 62 of these responses were a critical need for finance programs. Forty-nine companies in area 3 gave 143 responses for training, retraining and consulting. Seventeen of these were of a critical nature.

The data in Table 36 illustrate the need for training, retraining and consulting was the highest in the 101-200 employee category. Area 6 had the highest number of responses.

Table 36 Question 22

By Employees the Need For Finance

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	5	4	6	12		7	4		10	48
Retraining	2	2	2	6		6	1		3	22
Consulting	4	2	4	11		6	3	1	6	37
26-50										
Training		3	15	11	1	22	1	1	14	68
Retraining	1		13	4	1	7	1	1	2	30
Consulting	1	1	10	7	1	8	1		3	32
51-100										
Training	10	5	17	8	7	8	5	3	6	69
Retraining		3	19	5	6	4	6	2	4	49
Consulting	1	4	12	5	3	1	4	4	2	36
101-200										
Training	17	5	12	11	12	23	5	3	10	98
Retraining	2	5	14	1	10	13	4	2	5	56
Consulting	1		6	7	5	8	5	9	1	42
201-250										
Training	4	1	4		6	7	7		3	32
Retraining			1		2	3	3		5	14
Consulting		1				1	5			7
251-UP										
Training	3	3	5		17	3	6	2		39
Retraining			3		12	1	3	1		20
Consulting					14	3	3			20
Total	51	39	143	88	97	131	67	29	74	719

Table 37 Question 23

Do You Have A Need in the Area of Financial/Cost Systems?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	14	13	24	18	18	19	15	3	13	137
Retraining	4	3	18	8	10	11	8	3	8	73
Consulting	6	6	25	13	10	11	10	6	7	94
Supervisors										
Training	15	10	23	13	21	20	10	7	7	126
Retraining	1	2	14	8	9	10	8		5	57
Consulting		4	6	6	5	6	5	2	2	36
Tech. Support										
Training	12	8	14	10	12	15	6	4	6	87
Retraining		4	9	6	6	10	3	1	2	41
Consulting		3	5	6	4	7	3	4		32
Other employees										
Training	2	6	7	5	9	10	5	1	4	49
Retraining		3	4	3	3	4	2	1		20
Consulting		3	3	1	3	1	1	3		15
Total responses	54	65	152	97	110	124	76	35	54	767
Custom program	10	7	14	14	19	14	8	3	6	95
Existing course	15	18	34	26	15	32	22	9	13	184

Tables 37 - 39 reported the data obtained when the organizations were asked if they had a need in the area of financial and cost systems. As might be expected, management and supervisory employees received the highest number of requests in Table 37. There were 767 responses for training, retraining and consulting in financial and cost systems. Area 3 had 24 responses for training and 25 for consulting for their management employees. The data in Table 38 indicate 76 critical responses for training, retraining or consulting in the area of financial and cost sytems. Areas 3, 6 and 5 had over one hundred responses each for finance/cost systems. A total of 245 companies responded to the need in this area. The data in Table 39 reveal that the employee category of 101-200 employees had 142 responses for training, 74 for retraining and 54 for consulting in financial and cost systems. There were 46 responses from companies employing 251 plus persons.

Table 38 Question 23

Do You Have A Need in the Area of Financial And Cost Systems?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	31	52	65	69	49	77	44	29	38	454
A lot of need	14	12	58	18	58	40	23	3	11	237
Critical need	9	1	29	10	3	7	9	3	5	76
Total Responses	54	65	152	92	110	124	76	35	54	767
Total Companies	22	19	49	32	28	36	25	13	21	245

Table 39 Question 23

By Employees the Need For Financial and Cost Systems

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	3	5	6	8	1	7	4		6	40
Retraining	1	5	1	7		3	1		1	19
Consulting	2	4	4	6	5	4	2	1	5	33
26-50										
Training	2	2	11	7	1	14	1	4	9	51
Retraining	1		8	2	2	2	1	1	5	22
Consulting	1	1	12	4		4	2		3	27
51-100										
Training	11	10	11	16	12	6	6	7	4	83
Retraining	2	1	14	11	4	5	1	2	3	43
Consulting	1	4	12	8	4	2	5	4		40
101-200										
Training	18	13	28	15	16	28	13	2	9	142
Retraining	1	5	16	5	7	20	13	1	6	74
Consulting	2	4	8	8	4	11	6	10	1	54
201-250										
Training	6	4	6		9	5	5		2	37
Retraining		1	1		2	3	3			10
Consulting		3	3			1	2			9
251-UP										
Training	3	3	6		21	4	7	2		46
Retraining			5		13	2	2	1		23
Consulting					9	3	2			14
Total	54	65	152	97	110	124	76	35	54	767

Table 40 Question 24

Do You Have A Need in the Area of Management?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	21	17	32	26	26	28	15	4	19	188
Retraining	5	16	26	16	18	22	20	8	12	143
Consulting	7	5	18	13	11	12	11	4	7	88
Supervisors										
Training	25	28	40	39	34	42	20	10	26	264
Retraining	7	20	31	18	19	26	20	7	13	161
Consulting	3	5	14	12	7	13	8	5	5	72
Tech. Support										
Training	13	12	28	19	18	19	10	6	7	132
Retraining	3	11	15	9	8	13	6	3	5	73
Consulting	2	3	8	8	4	7	5	4	3	44
Other employees										
Training	2	8	17	11	8	14	5	4	3	72
Retraining		8	10	6	3	9	4	3	2	45
Consulting	1	1	6	3	1	4	1	3		20
Total responses	89	134	245	180	157	209	125	61	102	1302
Custom program	9	16	15	17	21	26	11	10	9	134
Existing course	18	31	39	34	24	49	27	14	30	266

Tables 40 - 42 represent the data obtained when the companies were asked their need in the area of management. The data in Table 40 indicate the largest number of responses for management training, retraining and consulting was for supervisory employees followed very closely by management employees. The total number of responses for management training, retraining and consulting was 1302. Two hundred sixty-six responses were for existing courses in management.

As might be expected, the data in Table 41 reveal that 108 of the responses were critical, 434 expressed a lot of need and 760 had some need. The total number of companies responding from some to critical need in the area of management was 351. Area 1 had 26 of the 32 companies surveyed (81%) which responded to having some to critical need in the area of management.

The data in table 42 reveal that in all sizes of companies, the top number of responses were for training in the area of management. The need here was very high as demonstrated by the number of responses and the number of companies responding to the need for management training, retraining and consulting in the area of management.

Table 41 Question 24

Do You Have A Need in the Area of Management?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	45	93	134	116	70	119	65	47	71	760
A lot of need	36	35	75	49	69	76	56	12	26	434
Critical need	8	6	36	15	18	14	4	2	5	108
Total Responses	89	134	245	180	157	209	125	61	102	1302
Total Companies	26	37	57	49	40	59	32	16	35	351

Table 42 Question 24

By Employees the Need for Management

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	7	7	7	22	2	9	3	3	14	74
Retraining	3	5	3	10	2	3	4		3	33
Consulting	1		3	12		3			4	23
26-50										
Training	6	3	36	26	1	27	8	5	16	128
Retraining	3	3	21	6		7	2	1	9	52
Consulting	3	2	16	6	1	5	2		8	43
51-100										
Training	11	19	22	19	16	13	13	6	11	130
Retraining	3	15	25	18	9	11	5	5	7	98
Consulting	2	4	14	7	4	4	6	3	1	45
101-200										
Training	23	28	38	18	25	33	15	7	12	199
Retraining	4	20	29	12	17	32	23	13	11	161
Consulting	3	4	12	9	7	20	7	13	2	77
201-250										
Training	7	5	6		12	5	8		2	45
Retraining	2	6	3			1	8		2	22
Consulting		4				3	4			11
251-UP										
Training	7	3	8	10	30	16	3	3		80
Retraining		6	1	3	20	16	8	2		56
Consulting	4		1	2	11	1	6			25
Total	89	134	245	180	157	209	125	61	102	1302

Table 43 Question 25

Do You Have A Need in the Area of Marketing?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	10	13	29	27	12	27	12	3	17	150
Retraining	3	4	21	14	5	19	15	4	11	96
Consulting	6	7	22	18	8	18	14	8	8	109
Supervisors										
Training	5	3	19	12	9	16	11	2	8	85
Retraining	1	2	9	8	3	8	10	1	7	49
Consulting	4	1	5	7	4	7	1	3	5	37
Tech. Support										
Training	5	2	11	13	5	10	8	1	6	61
Retraining	1		6	7	2	6	7		3	32
Consulting	2	1	3	6	5	5	3	2	2	29
Other employees										
Training	1	3	8	7	5	4	3	1	3	35
Retraining		3	4	4	1	3	3	1	2	21
Consulting		1	1	3	3	1		3		12
Total responses	38	40	138	126	62	124	87	29	72	716
Custom program	6	11	13	15	9	20	8	3	10	95
Existing course	12	18	29	31	12	37	21	8	18	186

Tables 43 - 45 reported the data obtained when the organizations were asked what degree of need they have in the area of marketing.

The data in Table 43 reveal that the training and consulting categories were high for the management staff of the companies interviewed. There were 716 responses of some to critical need. Ninety-five of these responses wanted custom programs in the area of marketing.

As reported in Table 44, 234 companies responded with 405 being some need, 222 a lot of need and 89 as a critical need in the area of marketing. Area 3 had 50 companies respond some to critical need for marketing programs.

The data reported in Table 45 reveal that in area 3 the need for training, retraining and consulting programs was spread from those companies employing 25-200 employees. There were 40 requests from companies employing 51-100 and 37 requests from the companies employing 101-200 employees.

Table 44 Question 25

Do You Have A Need in the Area of Marketing?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	15	11	71	71	46	77	48	19	47	405
A lot of need	14	24	47	30	15	39	22	10	21	222
Critical need	9	5	20	25	1	8	17		4	89
Total Responses	38	40	138	126	62	124	87	29	72	716
Total Companies	13	18	50	36	17	37	28	12	23	234

Table 45 Question 25

By Employees the Need For Marketing

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	4	2	6	19	2	8	3	1	12	57
Retraining	2			12		6	1		5	26
Consulting	3	2	5	11	6	4		1	5	37
26-50										
Training	3	4	21	19	1	11		2	5	66
Retraining	3	1	10	4		3		3	2	26
Consulting	5	1	9	8	1	6	1	3	7	41
51-100										
Training	2	7	15	11	4	9	11	3	10	72
Retraining		4	17	8		10	6	2	8	55
Consulting	1	2	8	4		3	6	2	2	28
101-200										
Training	7	2	18	6	7	18	11	1	5	75
Retraining		2	12	5	6	13	17		6	61
Consulting	3	1	7	7	4	15	5	10		52
201-250										
Training	4	4	3		2	5	7		2	27
Retraining		1				1	7		2	11
Consulting		4	1			2	3		1	11
251-UP										
Training	1	2	4	4	15	6	2	1		35
Retraining		1	1	4	5	3	4			18
Consulting			1	4	9	1	3			18
Total	38	40	138	126	62	124	87	29	72	716

Table 46 Question 26

Do You Have A Need in the Area of Management Information Systems?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	18	17	35	28	28	39	21	7	18	211
Retraining	4	7	15	11	14	23	10	8	9	101
Consulting	4	7	27	10	15	15	16	5	6	105
Supervisors										
Training	20	18	31	31	27	38	21	8	13	207
Retraining	4	9	12	14	13	18	10	3	9	92
Consulting	1	2	15	5	10	13	10	4	5	65
Tech. Support										
Training	15	18	26	29	23	31	16	11	14	183
Retraining	4	9	15	9	10	15	12	4	6	84
Consulting	1	2	12	5	7	11	10	5	4	57
Other employees										
Training	5	9	16	18	15	25	13	4	8	113
Retraining		5	8	7	5	8	9	4	3	49
Consulting		1	6	2	4	5	5	5	1	29
Total responses	76	104	218	169	171	241	153	68	96	1296
Custom program	10	14	20	19	23	28	13	7	15	149
Existing course	17	27	32	33	21	47	26	14	21	238

Tables 46 - 48 reflect the need in the area of management information systems expressed by the companies interviewed.

The data in Table 46 indicated that statewide there were 1296 responses for training, retraining and consulting in management information systems. For management, 211 were for training, 101 retraining and 105 for consulting. For supervisors, 207 requested training, technical support, 183 requested training and for other employees, 113 requested training. Two hundred thirty-eight requests were received for existing courses.

The data in Table 47 reveal that 172 responses from 316 companies were critical in nature, 437 with a lot of need and 687 expressed some need. Area 1 had 86% respond and Area 2 had 75% of the companies respond to the need for management information systems programs.

The data in Table 48 indicated that 241 responses for programs in management information systems came from area 6. Since the largest amount of surveys came from companies employing 101-200 employees, that bracket demonstrated the highest number of responses.

Table 47 Question 26

Do You Have A Need in the Area of Management Information Systems?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	39	52	106	100	73	141	83	41	52	687
A lot of need	26	39	77	52	58	85	59	9	32	437
Critical need	11	13	35	17	40	15	11	18	12	172
Total Responses	76	104	218	169	171	241	153	68	96	1296
Total Companies	23	31	53	46	39	52	31	17	24	316

Table 48 Question 26

By Employees the Need For Management Information Systems

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	5	12	8	22	6	17	5	5	13	93
Retraining	4	8	2	7		9	1	4	3	38
Consulting		2	5	5	4	9	1	4	3	33
26-50										
Training	7		23	24	1	29	10	6	14	114
Retraining	2	3	17	13	3	2	1	5	10	56
Consulting	3	1	16	2		2	2	4	7	37
51-100										
Training	16	16	25	27	19	17	12	7	11	150
Retraining	3	2	12	13	6	13	5	8	8	70
Consulting	1	3	23	6	7	7	10	1	6	64
101-200										
Training	20	24	38	24	31	45	24	7	13	226
Retraining	3	13	19	8	18	21	14	2	4	102
Consulting	2	6	13	9	14	21	7	10		82
201-250										
Training	6	6	10		11	8	11	2	2	56
Retraining					1	4	8		2	15
Consulting			1			4	6			11
251-UP										
Training	4	4	4	9	25	17	9	3		75
Retraining		4			14	15	12			45
Consulting			2		11	1	15			29
Total	76	104	218	169	171	241	153	68	96	1296

Table 49 Question 27

Do You Have A Need in the Area of Strategic Planning?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	14	13	29	25	10	30	16	5	12	154
Retraining	5	9	18	11	7	21	10	7	7	95
Consulting	4	13	19	22	7	14	13	5	10	107
Supervisors										
Training	10	6	25	13	8	13	9	3	5	92
Retraining	2	3	12	7	4	9	6	3	3	49
Consulting	2	3	10	7	2	6	5	2	3	40
Tech. Support										
Training	4	5	17	7	3	12	4	2	4	58
Retraining	1	3	3	3	1	4	2	2	2	21
Consulting		2	4	6		3	3	2	2	22
Other employees										
Training	2	3	8	2	2	4			2	23
Retraining	1	1	1	1		1		2		7
Consulting		2	1	2		2		2		9
Total responses	45	63	147	106	44	119	68	35	50	677
Custom program	9	15	9	11	7	19	10	4	7	91
Existing course	12	18	28	21	13	30	18	9	12	161

Tables 49-51 report the data obtained when organizations were asked if they had a need in the area of strategic planning.

The data in Table 49 indicated 677 total responses for training, retraining and consulting programs in the area of strategic planning. Ninety-one of these responses were for custom designed programs.

In Table 50 are data that 222 organizations responded with some need (369), a lot of need (232), and critical need (76) for strategic planning program.

In Table 51, area 5 did not have any companies employing 1-25 persons request programs in strategic planning. As expected, companies employing 101-200 people responded more frequently demonstrating their need in strategic planning.

Table 50 Question 27

Do You Have A Need in the Area of Strategic Planning?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	21	34	68	57	25	68	36	31	29	369
A lot of need	17	23	64	42	12	40	20	4	10	232
Critical need	7	6	15	7	7	11	12		11	76
Total Responses	45	63	147	106	44	119	68	35	50	677
Total Companies	14	24	40	36	16	37	23	12	20	222

Table 51 Question 27

By Employees the Need For Strategic Planning

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	8	3	9	14		10	5	1	8	58
Retraining	4	1	1	4		5			1	16
Consulting	4	3	4	13		6	2		5	37
26-50										
Training	1	1	24	13	1	15	3	2	4	64
Retraining	1	4	10	9		2	1	2	4	33
Consulting	1	3	10	9	1	3	4	2	7	40
51-100										
Training	4	6	18	10	6	9	8	3	3	67
Retraining	2	5	8	6	2	7	3		2	35
Consulting		7	6	7	2	2	5		3	32
101-200										
Training	11	16	23	8	6	18	8	4	8	102
Retraining	1	5	14	1	7	14	9	11	3	65
Consulting	1	1	12	6	3	14	8	9		54
201-250										
Training	6	1	2		2	1	4			16
Retraining	1	1					3		2	7
Consulting		4	1				2			7
251-UP										
Training			3	2	8	6	1			20
Retraining			1	2	3	7	2	1		16
Consulting		2	1	2	3					8
Total	45	63	147	106	44	119	68	35	50	677

Table 52 Question #28

Do You Have A Need in the Area of Human Resource Development?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	17	16	29	25	27	31	16	4	15	180
Retraining	5	9	18	12	15	24	17	4	10	114
Consulting	4	8	25	17	12	17	18	6	9	116
Supervisors										
Training	17	16	28	25	25	29	19	9	13	181
Retraining	6	10	16	11	15	22	15	1	8	104
Consulting	1	7	15	10	9	16	11	4	4	77
Tech. Support										
Training	7	8	13	7	8	13	6	2	4	68
Retraining	2	7	6	3	5	7	5		3	38
Consulting		3	8	4	4	5	5	3	2	34
Other employees										
Training	2	7	13	6	4	7	3	2	2	46
Retraining		3	5	3	2	4	3	1	1	22
Consulting		1	6	4	3	3	3	3	2	25
Total responses	61	95	182	127	129	178	121	39	73	1005
Custom program	10	13	16	9	17	20	12	2	10	109
Existing course	15	24	31	26	21	44	24	10	17	212

Tables 52-54 reflect the data obtained when companies were asked for their need in the area of human resource development. Table 52 represents the data obtained from the 1005 responses for training, retraining and consulting needs. As might be expected, management and supervisory employees received the highest number of responses for training, retraining and consulting in the area of human resource development. Table 53 reflects the breakdown of the data obtained from the 1005 responses by 290 companies. There were 584 responding some need, 314 a lot of need and 107 a critical need for programs in human resource development. There were 182 responses from area 3 followed by area 6 with 178.

In Table 54, there were 204 responses from companies employing 51-100 people. Areas 7, 4 and 5 were very close with 121-129 responses for training retraining or consulting in the area of human resource development.

Table 53 Question #28

Do You Have A Need in the Area of Human Resource Development?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	31	56	83	102	64	106	74	25	43	584
A lot of need	26	21	61	25	50	65	31	14	21	314
Critical need	4	18	38		15	7	16		9	107
Total Responses	61	95	182	127	129	178	121	39	73	1005
Total Companies	19	27	46	39	36	51	31	16	25	290

Table 54 Question #28

By Employees the Need For Human Resource Development

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	5	5	9	24		12	4	4	5	68
Retraining	1	1	2	10		6	2			22
Consulting		1	8	16	4	5	5	1	4	44
26-50										
Training	2	3	24	20	1	15	4	2	10	81
Retraining	2	2	17	8		7	2		10	48
Consulting	2	2	14	9		4	5	1	6	43
51-100										
Training	7	14	7	12	11	15	11	6	7	90
Retraining	2	10	15	8	6	8	6	2	4	61
Consulting	2	9	15	2	5	4	7	2	7	53
101-200										
Training	16	25	35	5	21	26	14	2	10	154
Retraining	5	16	11	3	15	23	15	1	6	95
Consulting	1	7	14	8	7	26	2	12		77
201-250										
Training	7		6		7	4	8	2	2	36
Retraining	3				1	2	9	2	2	19
Consulting			1			2	10			13
251-UP										
Training	6		2	2	24	8	3	1		46
Retraining					15	11	6	1		33
Consulting			2		12		8			22
Total	61	95	182	127	129	178	121	39	73	1005

Table 55 Question #29

Do You Have A Need in the Area of Logistics/Distribution?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	14	16	18	17	12	24	10	3	14	128
Retraining	3	8	16	7	9	9	7	5	9	73
Consulting	2	5	11	6	5	10	5	4	4	52
Supervisors										
Training	11	11	25	14	14	26	16	4	14	135
Retraining	4	9	19	5	10	13	13	2	10	85
Consulting	1	4	8	6	5	9	3	3	4	43
Tech. Support										
Training	6	7	13	7	5	13	10	4	4	69
Retraining	1	7	12	3	5	7	8	1	4	48
Consulting		1	5	4	3	4	3	3	2	25
Other employees										
Training		7	8	4	6	5	4	4	4	42
Retraining		3	5	3	4	4	1	2	1	23
Consulting	1		3	1	2	2		3		12
Total responses	43	78	143	77	80	126	80	38	70	735
Custom program	6	13	8	11	12	16	8	1	6	81
Existing course	13	28	28	24	18	37	22	9	15	194

Tables 55 - 57 represent the data obtained when organizations were asked to respond to their needs in the area of logistics/distribution.

Table 55 deals with the need for training, retraining and consulting needs in the area of logistics and distribution. The supervisory employees received 263 responses for training, retraining and consulting. This was followed by management employees which received 253 responses.

In Table 56, of the 735 responses received, 229 expressed a lot of need and 58 expressed a critical need in the area of logistics and distribution.

The data in Table 57 reveal again the largest number of requests were from the companies employing 101-200 employees. Area 9 which did not have any companies in the category of 251 plus had 70 responses from 23 companies for training, retraining and consulting programs in the area of logistics and distribution.

Table 56 Question #29

Do You Have A Need in the Area of Logistics/Distribution?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	27	47	77	51	49	79	48	30	40	448
A lot of need	9	24	53	26	18	37	26	8	28	229
Critical need	7	7	13		13	10	6		2	58
Total Responses	43	78	143	77	80	126	80	38	70	735
Total Companies	16	28	41	30	21	37	24	12	23	232

Table 57 Question #29

By Employees the Need For Logistics/Distribution

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	7	4	5	17		9	4		8	54
Retraining	2	2	5	10	1	6			7	33
Consulting	3	2		5		4			5	19
26-50										
Training		4	16	10	6	13	2	2	9	62
Retraining		1	10	2		3		2	6	24
Consulting			5	2		2		2	4	15
51-100										
Training	6	6	12	4	5	11	8	3	9	64
Retraining	2	4	14	5	3	5	9	6	2	50
Consulting		6	11		2	3	6	1	1	30
101-200										
Training	12	16	23	7	16	24	16	3	7	124
Retraining	2	15	23	1	15	16	13	1	5	91
Consulting	1		9	10	7	12	3	10		52
201-250										
Training	4	7	6		4	7	4	7	3	42
Retraining	2	1				2	4		4	13
Consulting		2	2			4				8
251-UP										
Training	2	4	2	4	6	4	6			28
Retraining		4			9	1	3	1		18
Consulting					6		2			8
Total	43	78	143	77	80	126	80	38	70	735

Table 58 Question #30

Do You Have A Need in the Area of Communication?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	18	12	25	23	18	28	14	5	10	153
Retraining	8	8	19	11	15	14	17	5	7	104
Consulting	3	4	14	13	7	11	11	2	3	68
Supervisors										
Training	19	13	26	21	21	30	17	6	13	166
Retraining	6	10	20	8	13	14	18	6	6	101
Consulting	2	4	11	8	6	9	9	3	3	55
Tech. Support										
Training	9	14	21	17	10	23	15	7	10	126
Retraining	2	11	10	9	9	10	16	3	5	75
Consulting	1	4	3	6	4	8	8	2	2	38
Other employees										
Training	6	10	14	12	10	20	9	7	5	93
Retraining	3	9	6	6	6	6	6	4	1	47
Consulting		1	2	2	3	9	4	4	2	27
Total responses	77	100	171	136	122	182	144	54	67	1053
Custom program	8	8	6	12	15	15	9	2	8	83
Existing course	14	22	32	29	17	39	23	10	17	203

Tables 58 - 60 represent the data obtained from companies when asked their needs in the area of communication.

The data in Table 58 indicate that management and supervisory employees received 647 responses for training, retraining and consulting of the 1053 received for all employees as indicated by the companies interviewed. Two hundred and three responses indicated they were interested in using existing courses.

Depicted in Table 59 are 257 organizations having some need (644), a lot of need (300) and a critical need (109) in the area of communication.

In table 60, area 6 had 182 responses followed by area 3 (171), area 7 (144), area 4 (136) and area 5 with 122 responses for the area of communcations. Thirty-nine organizations in area 5 with employees of 251 plus indicated a need for training, retraining and consulting in the area of communication.

Table 59 Question #30

Do You Have A Need in the Area of Communication?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	53	52	103	105	51	100	94	37	49	644
A lot of need	16	31	46	26	48	71	35	15	12	300
Critical need	8	17	22	5	23	11	15	2	6	109
Total Responses	77	100	171	136	122	182	144	54	67	1053
Total Companies	22	24	42	32	29	45	27	15	21	257

Table 60 Question #30

By Employees the Need For Communication

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	7		1	24	2	4	7	8	5	58
Retraining	7	4	1	13		1	3			29
Consulting		1	1	17			2		2	23
26-50										
Training	4	11	31	12	1	17	10	3	13	102
Retraining	4	5	18	5		4	6	1	9	52
Consulting	2	2	11	2	1	4	4		6	32
51-100										
Training	6	11	13	18	10	19	8	1	7	93
Retraining	3	6	11	11	9	5	13	8	4	70
Consulting	3	4	3	3	3	8	7	1	1	33
101-200										
Training	21	18	35	11	18	51	17	4	10	185
Retraining	2	18	19	5	16	25	21	5	4	115
Consulting	1	3	14	7	7	25	8	10	1	76
201-250										
Training	8	5	4		12		7	6	3	45
Retraining	3	1			4	2	5	2	2	19
Consulting		3	1				7			11
251-UP										
Training	6	4	2	8	16	10	6	3		55
Retraining		4	6		14	7	9	2		42
Consulting					9		4			13
Total	77	100	171	136	122	182	144	54	67	1053

Table 61 Question #31

Do You Have A Need in the Area of Office Administration?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	7	9	15	11	9	18	9	3	11	92
Retraining	3	8	11	7	8	12	13	2	7	71
Consulting	2	2	10	2	2	8	6	2	7	41
Supervisors										
Training	10	10	19	16	14	21	12	3	11	116
Retraining	2	7	17	6	11	12	14	4	7	80
Consulting	1	3	11	5	1	6	5	1	4	37
Tech. Support										
Training	14	9	19	17	10	22	11	7	13	122
Retraining	3	10	17	8	6	12	14	2	8	80
Consulting	2	3	8	4	1	8	5		3	34
Other employees										
Training	9	9	12	13	14	15	10	11	8	101
Retraining	2	8	9	10	8	10	13	3	2	65
Consulting		1	7	3	1	4	3	1		20
Total responses	55	79	155	102	85	148	115	39	81	859
Custom program	5	11	10	11	9	13	7	5	11	82
Existing course	16	30	37	27	21	43	27	17	21	239

Tables 61 - 63 indicate the need expressed when the companies were asked about their needs in the area of office administration.

Table 61 reported the data that indicated technical support employees, supervisory employees and other employees were the top three categories that demonstrated needs in the area of office administration. This accounted for 655 of the 859 responses received for training, retraining and consulting.

Table 62 depicts some need expressed by 555 responses, a lot of need by 244 responses and 60 responses expressed a critical need. There were 244 companies state-wide that expressed the 859 responses.

In Table 63, the category of 101-200 employees was the only one that reported training, retraining and consulting needs for office administration in every area of the state.

In area 9, 81 responses were received from the 27 companies that chose to answer some to critical need in the area of office administration.

Table 62 Question #31

Do You Have A Need in the Area of Office Administration?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	35	47	86	81	51	100	77	27	51	555
A lot of need	17	31	56	20	21	46	23	8	22	244
Critical need	3	1	13	1	13	2	15	4	8	60
Total Responses	55	79	155	102	85	148	115	39	81	859
Total Companies	19	23	40	31	24	37	27	16	27	244

Table 63 Question #31

By Employees the Need For Office Administration

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	6	7	9	14	1	10	2	8	8	65
Retraining	5	6	8	6		6			4	35
Consulting	1		4	8		3			4	20
26-50										
Training			12	16		15	5	6	12	66
Retraining	2	1	10	9		4	8	1	7	42
Consulting			9			5		1	7	22
51-100										
Training	9	10	12	7	3	7	6		7	61
Retraining	1	5	14	9	4	9	8	5	6	61
Consulting	1	2	8	2		3	7	1	1	25
101-200										
Training	19	14	25	9	16	35	18	6	14	156
Retraining	1	13	22	3	16	23	24	4	4	110
Consulting	3	4	11	2	5	15	2	2	2	46
201-250										
Training	5	2	4		9	4	8	2	2	36
Retraining	1	4					6		3	14
Consulting		3	1				7			11
251-UP										
Training	1	4	3	11	18	5	3	2		47
Retraining		4		4	13	4	8	1		34
Consulting			3	2			3			3
Total	55	79	155	102	85	148	115	39	81	859

Table 64 Question #32

Do You Have A Need in the Area of Safety and Security?

	Area 1	2	3	4	5	6	7	8	9	State Total
Management										
Training	10	14	13	17	15	29	19	3	11	131
Retraining	7	6	12	10	11	19	15	2	6	88
Consulting	1	8	16	10	11	15	14	3	6	84
Supervisors										
Training	12	10	18	18	21	34	16	7	16	152
Retraining	5	5	13	7	14	17	12	2	10	85
Consulting	2	5	15	8	9	13	10	2	7	71
Tech. Support										
Training	9	8	9	15	16	20	11	5	8	101
Retraining	2	4	8	5	8	13	9	2	5	56
Consulting		2	6	4	4	5	7	1	4	33
Other employees										
Training	3	7	15	12	13	15	7	5	8	85
Retraining		4	10	7	9	9	8	1	6	54
Consulting		1	8	3	5	5	4	2	3	31
Total responses	51	74	143	116	136	194	132	35	90	971
Custom program	5	12	8	14	13	24	7	5	10	98
Existing course	9	20	25	23	22	36	25	7	16	183

Tables 64 - 66 report the data obtained from the organizations when they were asked to respond to their needs in the area of safety and security.

The data depicted in Table 64 indicate the training, retraining and consulting needs in the area of safety and security were highest in the category of supervisory employees. Of the 971 responses received, 308 were in the supervisory category. One hundred and eighty-three responses indicated they would want existing courses in the area of safety and security.

As revealed in Table 65, 245 companies yielded responses from some need (562), a lot of need (253), and critical need (156) in the area of safety and security. Area 9 had 90 responses from 21 companies.

Table 66 represents the data obtained by number of employees in the areas of training, retraining and consulting. In area 9, 32 of the 90 responses were from companies employing 1-25 employees. Area 6 had 48 companies indicating 194 responses for training, retraining and consulting in the area of safety and security.

Table 65 Question #32

Do You Have A Need in the Area of Safety/Security?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	38	40	77	84	65	114	68	25	51	562
A lot of need	8	19	35	21	48	56	39	7	20	253
Critical need	5	15	31	11	23	24	25	3	19	156
Total Responses	51	74	143	116	136	194	132	35	90	971
Total Companies	15	22	33	34	29	48	31	12	21	245

Table 66 Question #32

By Employees the Need For Safety/Security

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	8	5	4	20	3	10	2	3	17	72
Retraining	3	3	5	8		3	1		9	32
Consulting		5	7	9		7	1		5	34
26-50										
Training	1	2	22	15	2	19	7	5	7	80
Retraining	1	1	18	4		8	3	1	9	45
Consulting	1	3	16	10	2	6	9	1	6	54
51-100										
Training	3	10	6	7	10	17	15	2	9	79
Retraining	5	4	3	8	2	13	8		5	48
Consulting		6	12	2	3	5	6	4	6	44
101-200										
Training	12	20	18	15	23	25	12	4	10	139
Retraining	2	10	15	8	20	23	15	3	4	100
Consulting	2	2	10	4	14	11	7	3	3	56
201-250										
Training	7		4		5	9	7	6		38
Retraining	3				4	4	7			18
Consulting						3	9			12
251-UP										
Training	3	2	1	5	22	18	10			61
Retraining		1	2	1	16	7	10	3		40
Consulting					10	6	3			19
Total	51	74	143	116	136	194	132	35	90	971

Table 67 Question #33

Do You Have A Need in the Area of Health?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	14	18	21	15	16	27	9	4	7	131
Retraining	2	1	7	5	5	9	7	2	6	44
Consulting	3	4	5	5	12	10	6	4	5	54
Supervisors										
Training	14	17	21	14	15	29	9	6	7	132
Retraining	2	2	7	5	5	8	7	1	6	43
Consulting	2	3	5	4	7	8	5	4	4	42
Tech. Support										
Training	14	15	16	12	15	23	7	5	7	114
Retraining	2	1	5	4	6	7	5		5	35
Consulting	1	2	4	2	8	6	4	1	2	30
Other employees										
Training	13	15	18	13	12	27	7	10	6	121
Retraining	2	2	5	5	5	8	6		4	37
Consulting	1	3	6	2	7	5	4	1	1	30
Total responses	70	83	120	86	113	167	76	38	60	813
Custom program	12	15	5	9	12	16	4	7	4	84
Existing course	9	18	20	12	13	29	14	6	10	131

Tables 67 - 69 represent the data obtained from the organizations when asked to respond to their need in the area of health.

Table 67 revealed the need for training, retraining and consulting in the categories of employees with supervisory employees first (132), management second (131) other employees third (121) and technical support employees fourth (114). Only 84 responses were received for custom programs in the area of health.

As depicted in Table 68, 176 companies yielded 526 responses of some need, 222 a lot of need, and 65 critical need in the area of health for a total of 813 responses.

In Table 69, only 18 of the 76 companies interviewed in area 4 responded to the need for training, retraining or consulting in the area of health. Training, again, was the largest response category overshadowing retraining and consulting in the area of health.

Table 68 Question #33

Do You Have A Need in the Area of Health?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	35	39	88	71	68	120	54	22	29	526
A lot of need	35	25	26	11	19	39	20	16	31	222
Critical need		19	6	4	26	8	2			65
Total Responses	70	83	120	86	113	167	76	38	60	813
Total Companies	16	19	27	18	23	35	15	12	11	176

Table 69 Question #33

By Employees the Need For Health

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	8	4	6	11	4	9			7	49
Retraining	4		2	2			4		3	15
Consulting				2		4			3	9
26-50										
Training		7	17	16	3	18		7	12	80
Retraining			8	8		1		1	8	26
Consulting			7	4		6		4	7	28
51-100										
Training	7	22	13	7	13	15	8	6		91
Retraining		4	6	1	5	8	5			21
Consulting	1	8	8	1	3	6	9			36
101-200										
Training	24	24	28	15	20	28	16	4	4	163
Retraining	4	2	8	8	12	11	10		4	59
Consulting	4	4	5	6	13	6	5	2	2	47
201-250										
Training	11	4	8		4	12	4	2	4	49
Retraining						4			6	10
Consulting					2	3	1	4		10
251-UP										
Training	5	4	4	5	14	24	4	6		66
Retraining					4	8	6	2		20
Consulting	2				16	4	4			26
Total	70	83	120	86	113	167	76	38	60	813

Table 70 Question #34

Do You Have A Need in the Area of Design?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	9	7	17	16	5	16	6	2	9	87
Retraining	4	4	12	6	9	7	4	2	7	55
Consulting	6	2	17	7	7	12	7	4	6	68
Supervisors										
Training	7	9	19	16	4	19	15	3	10	102
Retraining	1	5	16	8	5	6	11		8	60
Consulting	1	2	15	8	3	9	7	3	5	53
Tech. Support										
Training	13	18	20	26	13	23	16	6	13	148
Retraining	5	8	15	11	12	11	13	2	9	86
Consulting	2	3	12	6	6	10	7		6	52
Other employees										
Training	3	4	6	17	1	12	6	2	5	58
Retraining		4	6	7	1	8	5		4	35
Consulting		1	2	4	2	2	3		5	19
Total responses	51	69	157	132	68	135	100	24	87	823
Custom program	9	6	18	11	10	18	10	3	9	94
Existing course	12	25	23	23	16	31	24	6	18	178

Tables 70 - 72 represent the data resulting from the companies being asked to indicate their need in the area of design.

The data in Table 70 revealed the need for training, retraining and consulting was highest in the category of technical support employees. This category received 286 of the 823 responses in the area of design. One hundred seventy-eight of the responses indicated they would use existing courses in the area of design.

In Table 71, 472 responses indicated some need, 273 a lot of need and 78 a critical need in the area of design. There were 227 companies indicating some to critical need across the state. Area 7 had 100 responses from 22 of the 49 companies interviewed.

Table 72 depicted the need for training, retraining and consulting by employee size. Area 7 did not have any responses in the 26-50 employee category but had 21 in the 251 plus category. Area 9 was the only area not responding in the 101-200 employee category.

Table 71 Question #34

Do You Have A Need in the Area of Design?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	25	38	81	86	41	77	57	19	48	472
A lot of need	17	28	63	42	16	40	38	4	25	273
Critical need	9	3	13	4	11	18	5	1	14	78
Total Responses	51	69	157	132	68	135	100	24	87	823
Total Companies	17	22	38	35	21	38	22	12	22	227

Table 72 Question #34

By Employees the Need For Design

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training		7	8	20		12	4	4	16	71
Retraining	2		7	6		5	2		15	37
Consulting			8	7	5	9			7	36
26-50										
Training	2	5	20	21	2	16		2	7	75
Retraining	2		18	10	1			1	8	40
Consulting	2		13	5	1	6		2	8	37
51-100										
Training	7	9	12	17		11	7	2	9	74
Retraining	2	4	14	6	4	2	5		3	40
Consulting	4	5	9	7		5	7		7	44
101-200										
Training	11	16	16	12	10	24	20	3		112
Retraining	3	15	9	5	12	22	14	2		82
Consulting	3	3	13	3	6	11	4	1		44
201-250										
Training	6	1	2		3	6	5	2	5	30
Retraining	1		1		4	2	5		2	15
Consulting			2			2	6	4		14
251-UP										
Training	6	2	4	5	8	1	7			33
Retraining		2		5	6	1	7	1		22
Consulting			1	3	6		7			17
Total	51	69	157	132	68	135	100	24	87	823

Table 73 Question #35

Do You Have A Need in the Area of Testing?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	13	13	17	18	15	17	9	2	6	110
Retraining	4	7	12	10	9	13	7	3	9	74
Consulting	4	6	17	9	10	12	9	6	3	76
Supervisors										
Training	15	15	25	23	16	20	13	5	9	141
Retraining	5	8	21	16	10	14	10	2	13	99
Consulting	2	5	19	14	8	9	5	5	2	69
Tech. Support										
Training	18	18	28	24	22	25	17	9	12	173
Retraining	6	9	23	15	12	14	14	4	15	112
Consulting	1	6	14	9	11	11	7	6	4	69
Other employees										
Training	6	12	18	19	12	16	9	4	2	98
Retraining	1	8	15	11	7	10	6	1	2	61
Consulting		4	11	5	6	4	3	4	2	39
Total responses	75	111	220	173	138	165	109	51	79	1121
Custom program	12	14	27	14	15	21	9	5	10	127
Existing course	13	25	27	31	22	32	20	13	16	199

Tables 73 - 75 represent the data obtained when the organizations were asked their need in the area of testing.

The data in Table 73 indicated the employee area of technical support received 354 of the 1121 responses for training, retraining and consulting in the area of testing. This was followed by the category of supervisory employees with 309 responses.

In Table 74, 146 responses were received for a critical need, 411 a lot of need and 564 some need in the area of testing. Two hundred sixty-two companies responded 1126 times for the area of testing.

Table 75 depicted 173 responses from companies employing 251 plus employees. Area 3 had 220 responses from 49 companies far surpassing the other area responses in the area of testing.

Table 74 Question #35

Do You Have A Need in the Area of Testing?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	38	53	95	105	55	86	60	28	44	564
A lot of need	21	49	96	57	57	52	41	14	24	411
Critical need	16	9	29	11	26	27	8	9	11	146
Total Responses	75	111	220	173	138	165	109	51	79	1121
Total Companies	21	25	49	38	28	37	26	15	23	262

Table 75 Question #35

By Employees the Need For Testing

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	8	10	7	28	4	13	3	3	2	78
Retraining	6		7	12		3		3	8	39
Consulting		1	10	13		6	1	3		34
26-50										
Training	3	5	28	23	1	17		4	10	91
Retraining	3		21	14		5		1	15	59
Consulting	3		17	9		6		4	5	44
51-100										
Training	12	12	25	17	8	11	7	2	6	100
Retraining	2	4	30	17	7	10	7	1	6	84
Consulting	1	5	21	6	5	4	5		6	53
101-200										
Training	21	21	21	13	19	25	17	9	6	152
Retraining	4	19	10	4	9	22	18	3	5	94
Consulting	3	8	11	6	7	16	4	12		67
201-250										
Training	6	4	5		7	7	10	2	5	46
Retraining	1		1		2	4	6		5	19
Consulting			2		1	3	10	2		18
251-UP										
Training	2	6	2	3	26	5	11			55
Retraining		9	2	5	20	7	6	2		51
Consulting		7		3	22	1	4			37
Total	75	111	220	173	138	165	109	51	79	1121

Table 76 Question #36

Do You Have A Need in the Area of Maintenance and Set-Up?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	2	2	8	7	6	5	5	1	7	43
Retraining	1		5	5	4	2	3		5	25
Consulting	1	1	5	3	3	3	2	3	2	23
Supervisors										
Training	8	4	16	9	8	17	10	4	6	82
Retraining	3	4	8	7	7	11	5		6	51
Consulting	2	4	9	5	3	6	5	3	2	39
Tech. Support										
Training	7	4	19	14	12	18	11	6	9	100
Retraining	4	4	11	10	12	9	10	4	6	70
Consulting	1	2	9	3	4	4	6	2	3	34
Other employees										
Training	4	9	19	18	11	17	15	7	5	105
Retraining	3	5	13	9	9	8	11	3	6	67
Consulting	1		6	4	4	4	5		3	27
Total responses	37	39	128	94	83	104	88	33	60	666
Custom program	6	10	11	9	12	16	8	7	4	83
Existing course	10	19	24	20	18	26	18	10	13	158

Tables 76 - 78 represent the data obtained when the organizations were asked their need in the area of maintenance and set-up.

In Table 76, the data indicated the technical support employees and the other employees categories received 403 of the 666 responses received for training, retraining and consulting in the area of maintenance and set-up. The employee area of technical support received responses from all areas of the state in the categories of training, retraining and consulting.

Table 77 depicted the 666 responses received from 193 organizations. Four hundred and one reported some need, 176 reported a lot of need and 89 reported a critical need in the area of maintenance and set-up.

Table 77 Question #36

Do You Have A Need in the Area of Maintenance and Set Up?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	24	32	70	72	33	68	43	24	35	401
A lot of need	6	7	35	16	21	31	37	6	17	176
Critical need	7		23	6	29	5	8	3	8	89
Total Responses	37	39	128	94	83	104	88	33	60	666
Total Companies	11	16	37	26	23	32	20	13	15	193

Table 78 Question #36

By Employees the Need For Maintenance and Set-Up

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	2	1	11	20	1	10	2	6	8	61
Retraining	3		7	15		5	1		4	35
Consulting		1	11	6		4			3	25
26-50										
Training	2	3	21	4	2	7	3	5	10	57
Retraining	2	1	12	3		1	3		7	29
Consulting	2		8	3		2	4		5	24
51-100										
Training	1	4	5	9	9	4	9	3	4	48
Retraining		4	9	4	6	3	5	3	6	40
Consulting		1	4		3	1	7	2	2	20
101-200										
Training	8	11	17	10	7	22	19		4	98
Retraining	4	6	8	7	13	14	14	4	5	75
Consulting	3	2	4	6	2	8	5	6		36
201-250										
Training	5		6		6	6		2	1	26
Retraining	2				1	1			1	5
Consulting		3	2							5
251-UP										
Training	3		2	5	12	8	8	2		40
Retraining		2	1	2	12	6	6			29
Consulting					9	2	2			13
Total	37	39	128	94	83	104	88	33	60	666

Table 79 Question #37

Do You Have A Need in the Area of Systems Maintenance?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	6	7	9	10	7	9	4	2	7	61
Retraining	2	2	4	3	7	4	2	1	3	28
Consulting	3	4	9	4	3	8	2	5	2	40
Supervisors										
Training	13	9	18	18	13	26	13	11	7	128
Retraining	3	3	11	7	10	14	7	2	4	61
Consulting	3	3	16	9	6	12	4	3	2	58
Tech. Support										
Training	16	20	22	24	21	30	22	13	11	179
Retraining	7	11	17	9	18	12	16	4	7	101
Consulting	4	2	13	7	10	11	7	4	5	63
Other employees										
Training	5	12	16	13	15	22	16	10	5	114
Retraining	2	6	11	5	8	12	10	2	3	59
Consulting		1	9	3	4	6	4	3	3	33
Total responses	64	80	155	112	122	166	107	60	59	925
Custom program	10	16	16	10	16	22	11	11	6	118
Existing course	17	24	25	26	25	38	25	14	16	210

Tables 79 - 81 report the data obtained when the organizations were asked their need in the area of systems maintenance.

In the data reported in Table 79, the area of technical support employees received 343 of the 925 responses received for training, retraining and consulting in the area of systems maintenance. The category of supervisors was next followed very closely by the other employees category. There were 210 responses for existing courses.

In Table 80, the data indicated 269 companies made the 925 responses. In area 1, 22 companies responded of the 32 surveyed. Also in area 8, 20 of the 30 companies surveyed respond from some to critical need in the area of systems maintenance. State-wide, 482 responses were received for some need, 324 indicated a lot of need and 119 indicated a critical need in the area of systems maintenance.

Table 81 dealt with the data received as to the company size. Area 8 received 33 of their 60 responses in the category of 101-200 employees. Area 1 had 23 of their 64 responses in this category. Area 5 had 47 responses from the category of 251 plus employees, demonstrating their training, retraining and consulting needs in the area of systems maintenance.

Table 80 Question #37

Do You Have A Need in the Area of System Maintenance?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	28	54	85	69	51	84	57	31	23	482
A lot of need	22	19	55	32	44	53	40	24	35	324
Critical need	14	7	15	11	27	29	10	5	1	119
Total Responses	64	80	155	112	122	166	107	60	59	925
Total Companies	22	27	41	33	32	44	29	20	21	269

Table 81 Question #37

By Employees the Need For Systems Maintenance

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	2	4	10	17	2	8	5	7	7	62
Retraining	2		6	5		3	3		4	23
Consulting	2	1	9	5		3			3	23
26-50										
Training	4	2	12	14	1	10	4	5	9	61
Retraining	3	1	11	4	1	3	1		2	26
Consulting	4		14	5		2	2		4	31
51-100										
Training	6	8	12	19	14	13	8	7	3	90
Retraining	3	4	9	6	7	5	5	2	2	43
Consulting		3	13	2	4	6	5	1	5	39
101-200										
Training	15	25	24	8	15	30	19	12	6	154
Retraining	4	11	15	2	15	18	14	7	4	90
Consulting	4		6	6	5	16	2	14		53
201-250										
Training	7	5	3		8	11	7	2	5	48
Retraining	2		2		3	2	6		5	20
Consulting			5			5	5			15
251-UP										
Training	6	4	4	7	16	15	12	3		67
Retraining		6		7	17	11	6			47
Consulting		6		5	14	5	3			33
Total	64	80	155	112	122	166	107	60	59	925

Table 82 Question #38

Do You Have A Need in the Area of Machine Operations?

	Area 1	2	3	4	5	6	7	8	9	State Total
Management										
Training	3	2	10	9	3	7	2	2	5	43
Retraining	1	3	9	3	3	3	1	1	2	26
Consulting		2	5	5	2	4	1	1	1	21
Supervisors										
Training	6	3	17	16	4	19	7	1	6	79
Retraining	3	4	14	8	2	10	5	2	5	53
Consulting		2	8	8	3	6	5	1	2	35
Tech. Support										
Training	10	5	25	23	8	19	12	6	10	118
Retraining	5	7	20	11	7	12	8	1	8	79
Consulting	1	2	5	7	4	3	3	1	2	28
Other employees										
Training	9	13	25	33	8	25	17	6	13	149
Retraining	6	11	20	16	7	12	16	2	6	96
Consulting	1	1	7	11	3	5	5	1	4	38
Total responses	45	55	165	150	54	125	82	25	64	765
Custom program	6	11	10	15	7	17	7	5	10	88
Existing course	13	19	23	28	17	26	19	8	17	170

Tables 82 - 84 report the data received when the organizations were asked to indicate their needs in the area of machine operations.

In Table 82, the data indicates the need for training, retraining and consulting programs in the area of machine operations is, as might be expected, in the category of other employees. There were 283 responses in that category of the 765 received. The second category was technical support employees with 225. There were 170 responses for existing courses.

The data in Table 83 were received from 218 companies. There were 415 responses expressing some need, 229 stated a lot of need and 121 reported a critical need in the area of machine operation.

Table 84 reported the data that indicated in the categories of 1-25 and 26-50 employees received 279 of the 761 responses for machine operations. As expected, the largest response (200) was from the category of 101-200 employees because of the number of surveys in this category.

Table 83 Question #38

Do You Have A Need in the Area of Machine Operations?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	23	45	63	99	33	69	42	10	31	415
A lot of need	14	4	56	34	14	42	33	13	19	229
Critical need	8	6	46	17	7	14	7	2	14	121
Total Responses	45	55	165	150	54	125	82	25	64	765
Total Companies	16	19	39	39	14	34	25	9	23	218

Table 84 Question #39

By Employees the Need For Machine Operations

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	5	2	11	22	1	10	2	2	15	70
Retraining	4	5	11	13		3	1		7	44
Consulting			10	11		5			7	33
26-50										
Training	2	1	22	20		10	6		9	70
Retraining	3		17	9		3	4		8	44
Consulting	1		9	5		1	1		1	18
51-100										
Training	1	2	20	20	4	2	10		6	65
Retraining	4	5	23	10	2	1	5		3	53
Consulting		2	2	2	4		6		1	17
101-200										
Training	8	13	17	16	6	28	14		4	106
Retraining	2	8	10	3	9	17	10		3	62
Consulting	1	1	2	12		11	5			32
201-250										
Training	6	1	5		4	10	2	9		37
Retraining	2	1				3	3	5		14
Consulting			2				2	4		8
251-UP										
Training	6	4	2	3	8	10	4			37
Retraining		6	2	3	8	10	7	1		37
Consulting		4		1	8	1				14
Total	45	55	165	150	54	125	82	21	64	761

Table 85 Question #39

Do You Have A Need in the Area of Technical Systems Operators?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	4	3	10	11	4	7	7	3	7	56
Retraining	1	3	7	6	1	5	5	1	5	34
Consulting	1	3	5	6	1	6	2	1	1	26
Supervisors										
Training	6	6	14	21	7	17	13	7	8	99
Retraining	2	4	10	12	3	9	11	1	6	58
Consulting	1	4	7	8	2	8	3	1	1	35
Tech. Support										
Training	10	11	19	29	12	22	20	9	14	146
Retraining	5	6	13	18	6	11	16	1	12	88
Consulting	1	4	6	11	4	10	4	2	3	45
Other employees										
Training	10	9	19	26	11	12	15	8	7	117
Retraining	4	4	13	18	5	7	13		4	68
Consulting	1	3	5	12	2	6	4			33
Total responses	46	60	128	178	58	120	113	34	68	805
Custom program	9	8	10	15	8	17	6	5	5	83
Existing course	12	18	17	28	14	26	22	9	15	161

Tables 85 - 87 represent the data obtained when the organizations were asked to indicate their need in the area of technical systems operators.

In Table 85, the data indicated the categories of technical support employees (279) and other employees (218) received the vast majority of the 805 responses for training, retraining and consulting in the area of technical systems operators. There were 161 responses for existing programs in the area of technical systems operators.

The data reported in Table 86 indicated there were 417 responses of some need, 265 expressed a lot of need and 123 reported a critical need in the area of technical systems operators. There were 197 companies that responded from some to critical need in the area of technical systems operators.

Table 87 reported the data received by company size. Since more companies were surveyed in the category of 101-200 employees, this category received the highest response. The other categories received a relatively even distribution.

Table 86 Question #39

Do You Have A Need in the Area of Technical Systems Operators?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	23	38	39	102	40	62	67	19	27	417
A lot of need	18	21	47	64	8	35	38	11	23	265
Critical need	5	1	42	12	10	23	8	4	18	123
Total Responses	46	60	128	178	58	120	113	34	68	805
Total Companies	15	17	30	35	16	27	25	12	20	197

Table 87 Question #39

By Employees the Need For Technical Systems Operators

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	6	5	7	17	1	8	3	3	17	67
Retraining		2	7	5		3	2		10	29
Consulting			3	12		3			3	21
26-50										
Training	3	2	17	24	1	7	4	3	5	66
Retraining	4		14	14					4	36
Consulting	3		10	9		1				23
51-100										
Training	3	2	13	24	6	6	12	6	5	77
Retraining	5	1	15	21	4	1	7		4	58
Consulting		1	4	5	3	3	4	2	2	24
101-200										
Training	10	10	18	12	10	23	16		4	103
Retraining	3	4	4	5	6	15	21		4	62
Consulting	1	5	4	6	2	15	2			35
201-250										
Training	4	6	5		8	6	8	5	5	47
Retraining		4				3	7	3	5	22
Consulting		4	2			5	7	2		20
251-UP										
Training	4	4	2	10	8	8	12	4		52
Retraining		6	3	9	5	10	8			41
Consulting		4		5	4	3				16
Total	46	60	128	178	58	120	113	28	68	799

Table 88 Question #40

Do You Have A Need in the Area of Material Properties?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	6	5	9	9	6	7	6	3	5	56
Retraining	1	1	6	5	3	6	5	2	2	31
Consulting		2	6	7	2	9	3	3	2	34
Supervisors										
Training	8	6	12	16	5	9	6	3	6	71
Retraining	1	2	7	5	4	8	7	4	3	41
Consulting		2	11	8	3	5	5	3	2	39
Tech. Support										
Training	11	9	15	16	9	18	6	4	8	96
Retraining	6	4	12	7	8	10	9	5	4	65
Consulting	2	2	10	7	6	5	5	3	3	43
Other employees										
Training	5	4	7	15	4	9	4	2	3	53
Retraining		1	4	5	1	4	4	3	1	23
Consulting			4	4		2	3	2	2	17
Total responses	40	38	103	104	51	92	63	37	41	569
Custom program	7	9	10	8	7	13	5	2	7	68
Existing course	10	15	25	18	12	23	15	7	9	134

Tables 88 - 90 represent the data obtained when the organizations were asked to indicate their need in the area of material properties.

In Table 88, the data indicated the largest response was received from the technical support employee category (204). This was followed by supervisory employees with 151 responses. There were 134 responses for existing courses.

In Table 89, the data indicated 155 companies had some need (366), a lot of need (147) and critical need (56) in the area of material properties. The 569 responses received for this area was the lowest number in the survey.

Table 90 indicated there was a relatively even distribution between the categories of employment for programs in the area of material properties. Again, the lowest was between 101-200 employees.

Table 89 Question #40

Do You Have A Need in the Area of Material Properties?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	27	28	46	72	28	59	48	31	27	366
A lot of need	8	3	45	32	11	26	12	2	8	147
Critical need	5	7	12		12	7	3	4	6	56
Total Responses	40	38	103	104	51	92	63	37	41	569
Total Companies	13	13	26	24	14	30	15	8	12	155

Table 90 Question #40

By Employees the Need For Material Properties

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	4	2	5	13	1	8		4	1	38
Retraining	4		3	3		5			1	16
Consulting		1	3	9		5				18
26-50										
Training	5	1	14	18		6			10	54
Retraining	1		10	8		3			3	25
Consulting	1		10	7	1	5			7	31
51-100										
Training	8	11	6	10	1	10	5	2	2	55
Retraining	1	3	7	3	1	3	1		1	20
Consulting		3	12		2	3	3		1	24
101-200										
Training	8	10	14	10	14	10	9	4	7	86
Retraining	2	3	5	4	10	9	16	14	3	66
Consulting		2	6	9	4	7	4	11	1	44
201-250										
Training	4				4	3	7		2	20
Retraining					1	1	7		2	11
Consulting	1						7			8
251-UP										
Training	1		4	5	4	6	1	2		23
Retraining		2	4	4	4	7	1			22
Consulting				1	4	1	2			8
Total	40	38	103	104	51	92	63	37	41	569

Table 91 Question #41

Do You Have A Need in the Area of Process Change?

Area	1	2	3	4	5	6	7	8	9	State Total
Management										
Training	17	25	36	31	22	29	19	9	16	204
Retraining	7	12	21	22	14	17	14	6	10	123
Consulting	4	9	25	14	12	15	16	4	7	106
Supervisors										
Training	21	26	39	32	28	31	23	14	17	231
Retraining	8	14	22	20	16	23	17	5	11	136
Consulting	4	5	23	15	12	12	11	5	6	93
Tech. Support										
Training	18	24	33	25	25	30	21	12	13	201
Retraining	5	13	17	19	14	19	14	6	10	117
Consulting	1	3	13	10	10	10	8	6	4	65
Other employees										
Training	15	22	30	23	21	26	17	12	11	177
Retraining	5	11	11	12	13	16	14	5	7	94
Consulting	1	2	10	9	6	8	6	2	3	47
Total responses	106	166	280	232	193	236	180	86	115	1594
Custom program	16	26	28	23	24	33	14	11	13	188
Existing course	13	31	36	35	25	38	29	13	20	240

Tables 91 - 93 represent the data obtained when the organizations were asked to indicate their need for process change.

In Table 91, the data indicated 460 responses for the category of supervisory employees, 433 responses for management, 383 for technical support employees and 318 for other employees for training, retraining and consulting in the area of process change. There were 240 requests for existing courses.

The data in Table 92 indicated 753 responses that expressed some need, 582 a lot of need and 259 expressed a critical need in the area process change. In area 1 there were 22 of the 32 companies responding to this question with 106 responses. Twenty one of the 30 companies in area 8 responded with 86 requests.

The data in Table 93 indicated there were a large number of requests in each employment category for process change. Retraining had the top number of responses in each employment category. Areas 2, 4, 6 received 748 of the 1594 requests for process change.

Table 92 Question #41

Do You Have A Need in the Area of Process Change Training?

Area	1	2	3	4	5	6	7	8	9	State Total
Some need	51	78	91	126	90	112	80	45	80	753
A lot of need	33	57	130	91	54	83	72	37	25	582
Critical need	22	31	59	15	49	41	28	4	10	259
Total Responses	106	166	280	232	193	236	180	86	115	1594
Total Companies	25	34	48	46	38	50	34	21	27	323

Table 93 Question #41

By Employees the Need For Process Change

Area	1	2	3	4	5	6	7	8	9	State Total
1-25										
Training	8	17	10	31	3	6	5	8	7	95
Retraining	8		3	17		5			6	39
Consulting	4	1	8	13		3	3			32
26-50										
Training	2	11	34	25	7	21	6	8	11	125
Retraining	5	4	22	15		8	3	2	10	69
Consulting	2	1	14	9	2	6	7	4	7	52
51-100										
Training	19	17	25	21	20	21	19	9	13	164
Retraining	3	6	17	16	16	10	18	4	4	94
Consulting		4	13	6	12	8	6	2	10	61
101-200										
Training	28	41	55	21	24	34	28	18	22	271
Retraining	2	26	25	15	19	29	20	12	14	162
Consulting	4	5	29	12	7	18	13	6	1	95
201-250										
Training	10	4	6		16	14	13		4	67
Retraining	5	3			1	6	8		4	27
Consulting		3	3			7	9	2	2	26
251-UP										
Training	4	7	8	13	26	20	9	4		91
Retraining	2	11	4	10	21	17	10	4		79
Consulting		5	4	8	19	3	3	3		45
Total	106	166	280	232	193	236	180	86	115	1594

Table 94 Question #42

The Areas of Technical Support

Area	1	2	3	4	5	6	7	8	9	State Total
Chemical analysis	9	8	14	7	8	17	6	4	5	78
Computer sys. anl.	10	15	24	19	14	22	8	8	12	132
Reading assessm.	7	5	14	9	9	11	5	5	2	67
Math assessment	7	10	18	14	9	21	5	3	4	91
Hazardous mat.	13	15	18	21	18	39	30	9	12	175
Materials test.	10	13	25	10	10	29	15	8	11	131
Stat. proc. cont.	19	27	39	36	30	36	20	13	19	239
Crisis management	5	10	8	9	8	8	7	3	3	61
Computer design	12	19	26	20	16	24	22	7	25	171
Prog. logic cont.	13	11	10	12	12	16	8	7	10	99
Geometric dem/tol.	12	9	16	17	6	12	8	6	4	90
Just in time	8	14	24	23	12	28	10	8	10	137
Injection molding	2	10	15	4	3	15	4	1	3	57
Fiberoptics	4	1	1	1		3	1	1	2	14
Robotics	9	12	11	10	13	15	7	4	5	86
Total responses	140	179	263	212	168	296	156	87	127	1628

The data in Tables 94 and 95 indicate the technical support and other support services the companies surveyed were interested in the colleges providing. The top six areas of technical support were statistical process control (239), hazardous materials handling

(175), computer assisted design (171), just in time (137), computer systems analysis (132), and materials testing (131). An interesting aspect of the survey was topics not chosen, such as robotics, fiberoptics and geometric dimensioning and design.

Table 95 for other services the companies may want the colleges to provide indicated the following top five areas: co-op students (194), screening for employees (132), retirement planning (104), audio video support (94) and technical writing (91).

Table 95 Question #43

Other Services of Interest

Area	1	2	3	4	5	6	7	8	9	State Total
Audio/video	10	12	15	6	11	16	9	5	10	94
Screening for emp.	8	15	25	17	19	25	10	3	10	132
Use college equip.	5	16	21	8	8	15	8	4	10	95
Retirement plan.	6	6	13	16	12	25	10	8	8	104
Career planning	3	4	11	7	8	12	4	2	3	54
Data/Lit. search	2	8	9	4	6	9	6	1	4	49
Credit for exper.	7	8	7	8	11	20	8	12	4	85
Procurement serv.	4	6	5	5	3	10	1	2	5	41
Co-op students	13	19	23	26	19	41	28	10	15	194
Faculty int./exch.	6	6	9	11	5	15	8	4	4	68
Technical writing	9	8	14	11	5	15	12	8	9	91
Total responses	73	108	152	119	107	203	104	59	82	1007

Table 96 Question #44

Need for Management, Supervisory, or Employee Training Programs

Area	1	2	3	4	5	6	7	8	9	State Total
Yes	22	43	62	46	42	64	36	21	42	378
No	5	4	11	22	10	17	7	4	18	98
Total responses	27	47	73	68	52	81	43	25	60	476

Table 96 contains the data obtained when the organizations were asked about their needs in the future for management, supervisory or employee training programs. Three hundred and seventy-eight (79%) of the companies answering this question indicated they will have the need for these programs in the future. In area 2, 87% of the companies surveyed indicated they would be having these programs in the future.

Table 97 Question #45

How Are Your Current Training, Retraining and Consulting Needs Being Met?

Area	1	2	3	4	5	6	7	8	9	State Total
2yr. college	24	29	23	22	20	44	28	8	15	213
Vendor Training	20	25	40	25	24	39	28	9	17	227
Consulting firms	8	23	27	21	20	28	16	9	11	163
Internally	26	40	66	63	48	72	42	23	45	425
Proprietary sch.	2	4	8	3	6	4	9	3	4	43
Vocational H. S.	17	11	24	23	18	32	17	6	19	167
Total responses	97	132	188	157	136	219	140	58	111	1238

Table 97 represents the data obtained when the companies surveyed were asked how their current training, retraining and consulting needs are being met. Four hundred twenty-five or 37% of the responses indicated their needs were being met internally. Vendor training was chosen by 18% of the respondents while 17.2% are currently being served by two year colleges. Thirteen percent are being helped by vocational high schools.

Table 98 Question #46

Would You Like Additional Beneficial Program Information?

Area	1	2	3	4	5	6	7	8	9	State Total
Strong Uninterest.	1	1	3	5	3	1	2		1	17
Uninterested	2	2	4	12	9	8	2	1	16	56
Undecided	2	6	11	14	5	10	3	3	6	60
Interested	12	20	38	27	21	55	22	13	28	236
Strong interest	7	8	11	7	5	8	5	1	5	57
Total responses	24	37	67	65	43	82	34	18	56	426

Table 98 reports the data obtained when the organizations were asked if they would like additional beneficial educational programs for their employees. Fifty-five percent of the respondents answered they were interested. Thirteen percent indicated a strong interest while only 3% indicated they were strongly uninterested.

Summary and Recommendations

The purpose of this study was to reveal the training, retraining, consulting and technical support needs of small manufacturing companies in the State of Ohio. The data were obtained from the nine areas of the state as designated by the Ohio Board of Regents. The study provided a basis for reflecting what resources the two year campuses for Ohio should develop and make available to these small manufacturing companies.

Method

The subjects of this study were the small manufactuing companies in the State of Ohio. Five hundred and fifty-eight surveys were requested from the nine areas of the state. Several institutions completed more than they were assigned and several did not complete any surveys or less than they were assigned. The goal of over 500 surveys was obtained when 519 surveys were returned by October of 1988.

The questions in the data collection device were written to provide demographic data and separate data for management, supervisors, technical support employees and other employees. The questionnaire provided data about business functions such as finance, management, process change as well as health, office administration, and safety/security. Technical areas such as testing and system maintenance were also included. The final section of the

questionnaire was designed to obtain information about technical and other support services important to small manufacturing companies. This was followed by specific questions about programs that two year campuses could provide for the particular small manufacturing company.

Summary of Findings

The training, retraining and cousulting needs identified by the 519 small manufacturing companies as well as the total responses for the state were identified in Table 99.

Table 99

The Training, Retraining, and Consulting Needs of the Small Manufacturing Companies in the State of Ohio

Category	State Total	Training	Retraining	Consulting
Process change	1594	813	470	311
Management	1302	656	422	224
Management info. sys.	1296	714	326	256
Testing	1121	522	346	253
Communications	1053	538	327	188
Human resource dev.	1005	475	278	252
Safety/security	971	469	283	219
Sys. maintenance	925	482	249	194
Office adm.	859	431	296	132
Design	823	395	236	192
Health	813	498	159	156
Tech. sys. operators	805	418	248	139
Financial cost sys.	767	399	191	177
Machine operation	765	389	254	122
Logistics/dist.	735	374	229	132
Finance	719	354	191	174
Marketing	716	331	198	187
Strategic planning	677	327	172	178
Maintenance set-up	666	330	213	123
Material properties	569	276	160	133
Total	18,181	9,191	5,248	3,742

The total number of requests for training, retraining and consulting in the topic areas was 18,181. The top five training, retraining and consulting needs for the State of Ohio were: process change, management, management information systems, testing and communication. Although the exact number of participants is unknown, the size of the number of requests by the companies in the table seems to indicate a potential for a large number of participants. The two year institutions should follow up with contacts in the organizations to develop quality training programs.

Tables 100-108 indicate the training, retraining and consulting needs of the companies surveyed in the nine areas of the State of Ohio. Although their was some variance the top five requests for training, retraining, and consulting are all included in the top ten requests from each area.

Table 100

Training, Retraining and Consulting Needs of Area 1

Category	Area Total	Training	Retraining	Consulting
Process change	106	71	25	10
Management	89	61	15	13
Communication	77	52	19	6
Management info. sys.	76	58	12	6
Testing	75	52	16	7
Health	70	55	8	7
Sys. maintenance	64	40	14	10
Human resource dev.	61	43	13	5
Office adm.	55	40	10	5
Financial cost sys.	54	43	5	6
Safety/security	51	34	14	3
Design	51	32	10	3
Finance	51	39	5	7
Tech. sys. operators	46	30	12	4
Machine operation	45	28	15	2
Strategic planning	45	30	9	6
Logistics/distribution	43	31	8	4
Material properties	40	30	8	2
Marketing	38	21	5	12
Maintenance set-Up	37	21	11	5

Table 101

Training, Retraining and Consulting Needs of Area 2

Category	Area Total	Training	Retraining	Consulting
Process change	166	97	50	19
Management	134	55	55	14
Testing	111	58	32	21
Management info. sys.	104	62	30	12
Communication	100	49	38	13
Human resource dev.	95	47	29	19
Health	83	65	6	12
Sys. maintenance	80	48	22	10
Office adm.	79	37	33	9
Logistics/distribution	78	41	27	10
Safety/security	74	39	19	16
Design	69	40	21	8
Financial cost sys.	65	37	12	6
Strategic planning	63	27	16	20
Tech. sys. operators	60	29	17	14
Machine operation	55	23	25	7
Marketing	40	21	9	10
Finance	39	21	10	8
Maintenance set-up	39	21	10	8
Material properties	38	24	8	6

Table 102

Training, Retraining and Consulting Needs of Area 3

Category	Area Total	Training	Retraining	Consulting
Process change	280	138	71	71
Management	245	117	82	46
Testing	220	88	71	61
Management info. sys.	218	108	50	60
Human resource dev.	182	83	45	54
Communication	171	86	55	30
Machine operation	165	77	63	25
Design	157	62	49	46
Sys. maintenance	155	65	43	47
Office adm.	155	65	54	36
Financial cost sys.	152	68	45	39
Strategic planning	147	79	34	34
Safety/security	143	55	43	45
Logistics/distribution	143	64	52	27
Finance	143	59	52	32
Marketing	138	67	40	31
Maintenance set-up	128	62	37	29
Tech. sys. operators	128	62	43	23
Health	120	76	24	20
Material properties	103	43	29	31

Table 103

Training, Retraining and Consulting Needs of Area 4

Category	Area Total	Training	Retraining	Consulting
Process change	232	111	73	48
Management	180	95	49	36
Tech. sys. operators	178	87	54	37
Testing	173	84	52	37
Management info. sys.	169	106	41	22
Machine operations	165	81	38	31
Communications	136	73	34	29
Design	132	75	32	25
Human resource dev.	127	63	29	35
Marketing	126	59	33	34
Safety/security	116	62	29	25
Sys. maintenance	112	65	24	23
Strategic planning	106	47	22	37
Material properties	104	56	22	26
Office adm.	102	57	31	14
Financial cost sys.	97	46	25	26
Maintenance set-up	94	48	31	15
Finance	88	42	16	30
Health	86	54	19	13
Logistics/distribution	77	42	18	17

Table 104

Training, Retraining and Consulting Needs of Area 5

Category	Area Total	Training	Retraining	Consulting
Process change	193	96	57	40
Management info. sys.	171	93	42	36
Management	157	86	48	23
Testing	138	65	38	35
Safety/security	136	65	42	29
Human resource dev.	129	64	37	28
Communication	122	59	43	20
Sys. maintenance	122	56	43	23
Health	113	58	21	34
Financial cost sys.	110	60	28	22
Finance	97	43	31	23
Office adm.	85	47	33	5
Maintenance set-up	83	37	32	14
Logistics/distribution	80	37	28	15
Design	68	23	27	18
Marketing	62	31	11	20
Tech. sys. operators	58	34	15	9
Machine operations	54	23	19	12
Material properties	51	24	16	11
Strategic planning	44	23	12	9

Table 105

Training, Retraining and Consulting Needs of Area 6

Category	Area Total	Training	Retraining	Consulting
Process change	236	116	75	45
Management info. sys.	241	133	64	44
Management	209	103	70	36
Safety/security	194	98	58	38
Communication	182	101	44	37
Human resource dev.	178	80	57	41
Health	167	106	32	29
Sys. maintenance	166	87	42	37
Testing	165	78	51	36
Office adm.	148	76	46	26
Design	135	70	32	33
Finance	131	70	34	27
Logistics/distribution	126	68	33	25
Machine operations	125	70	37	18
Marketing	124	57	36	31
Financial cost sys.	124	64	35	25
Tech. sys. operators	120	58	32	30
Strategic planning	119	59	35	25
Maintenance set-up	104	57	30	17
Material properties	92	43	28	21

Table 106

Training, Retraining and Consulting Needs of Area 7

Category	Area Total	Training	Retraining	Consulting
Process change	180	80	59	41
Management info. sys.	153	71	41	41
Communication	144	55	57	32
Safety/security	132	53	44	35
Management	125	50	50	25
Human resource dev.	121	44	40	37
Office adm.	115	42	54	19
Tech. sys. operators	113	55	45	13
Testing	109	48	37	24
Sys. maintenance	107	55	35	17
Design	100	43	33	24
Maintenance set-up	88	41	29	18
Marketing	87	34	35	18
Machine operations	82	38	30	14
Logistics/distribution	80	40	29	11
Health	76	32	25	19
Financial cost sys.	76	36	21	19
Strategic planning	68	29	18	21
Finance	67	28	18	21
Material properties	63	22	25	16

Table 107

Training, Retraining and Consulting Needs of Area 8

Category	Area Total	Training	Retraining	Consulting
Process change	86	47	22	17
Management info. sys.	68	30	19	19
Management	61	24	21	16
Sys. maintenance	60	36	9	15
Communication	54	25	18	11
Testing	51	20	10	21
Human resouce dev.	39	17	6	16
Office adm.	39	24	11	4
Health	38	25	3	10
Logistics/distribution	38	15	10	13
Material properties	37	12	14	11
Safety/security	35	20	7	8
Financial cost sys.	35	15	5	15
Strategic planning	35	10	14	11
Tech. sys. operators	34	27	3	4
Maintenance set-up	33	18	7	8
Finance	29	9	6	14
Marketing	29	7	6	16
Machine operations	25	15	6	4
Design	24	13	4	7

Table 108

Training, Retraining and Consulting Needs of Area 9

Category	Area Total	Training	Retraining	Consulting
Process change	115	57	38	20
Management	102	55	32	15
Management info. sys.	96	53	27	16
Safety/security	90	43	27	20
Design	87	37	28	22
Office adm.	81	43	24	14
Testing	79	29	39	11
Finance	74	43	19	12
Human resource dev.	73	34	22	17
Marketing	72	34	23	15
Logistics/distribution	70	36	24	10
Tech. sys. operators	68	36	27	5
Communication	67	38	19	10
Machine operations	64	34	21	9
Health	60	27	21	12
Maintenance set-up	60	27	23	10
Sys. maintenance	59	30	17	12
Financial cost sys.	54	30	15	9
Strategic planning	50	23	12	15
Material properties	41	22	10	9

Table 109

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State Of Ohio

Category	State of Ohio Some Need	A Lot of Need	Critical Need	Total	Rank
Process change	753	582	259	1594	1
Management	760	434	108	1302	2
Management information sys.	687	437	172	1296	3
Testing	564	411	146	1121	4
Communications	644	300	109	1053	5
Human resource dev.	584	314	107	1005	6
Safety/security	562	253	156	971	7
Systems maintenance	482	324	119	925	8
Office administration	555	244	60	859	9
Design	472	273	78	823	10
Health	526	222	65	813	11
Technical sys. operators	417	265	123	805	12
Financial cost systems	454	237	76	767	13
Machine operation	415	229	121	765	14
Logistics/distribution	448	229	58	735	15
Finance	441	216	62	719	16
Marketing	405	222	89	716	17
Strategic planning	369	232	76	677	18
Maintenance set-up	401	176	89	666	19
Material properties	366	147	56	569	20
Total	10,305	5,747	2,129	18,181	

Table 109 indicated the twenty categories by the response of some need, a lot of need and critical need for programs in the State of Ohio from the 519 small manufacturing companies surveyed.

The first five responses for programs with some to critical need were: process change, management, management information systems, testing and communication. The top five categories of critical need were: process change, management information systems, safety/security, testing and technical systems operators. In the a lot of need area, human resource development took the place of communications in the top five categories chosen.

Tables 110-118 indicate the state response compared to each of the areas total requests from some to critical need for programs and the area ranking.

In Table 110, area 1, health and financial cost systems took the place of safety and security and design in the top ten requested programs.

Table 111 represents the data from area 2. Health and logistics/distribution take the place of safety/security in the top ten requested programs for area 2.

In Table 112, machine operation took the place of safety/security in the top ten requested programs in area 3.

Table 110

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 1

Category	State Response Total	Area 1 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	51	33	22	106	1
Management	1302	45	36	8	89	2
Management info. sys.	1296	39	26	11	76	4
Testing	1121	38	21	16	75	5
Communications	1053	53	16	8	77	3
Human resource dev.	1005	31	26	4	61	8
Safety/security	971	38	8	5	51	11
Sys. maintenance	925	28	22	14	64	7
Office adm.	859	35	17	3	55	9
Design	823	25	17	9	51	12
Health	813	35	35		70	6
Tech. sys. operators	805	23	18	5	46	14
Financial cost sys.	767	31	14	9	54	10
Machine operation	765	23	14	8	45	15
Logistics/distribution	735	27	9	7	43	17
Finance	719	29	16	6	51	13
Marketing	716	15	14	9	38	19
Strategic planning	677	21	17	7	45	16
Maintenance set-up	666	24	6	7	37	20
Material properties	569	27	8	5	40	18

Table 111

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 2

Category	State Response Total	Area 2 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	78	57	31	166	1
Management	1302	93	35	6	134	2
Management info. sys.	1296	52	39	13	104	4
Testing	1121	53	49	9	111	3
Communications	1053	52	31	17	100	5
Human resource dev.	1005	56	21	18	95	6
Safety/security	971	40	19	15	74	11
Sys. maintenance	925	54	19	7	80	8
Office adm.	859	47	31	1	79	9
Design	823	38	28	3	69	12
Health	813	39	25	19	83	7
Tech. sys. operators	805	38	21	1	60	15
Financial cost sys.	767	52	12	1	65	13
Machine operation	765	45	4	6	55	16
Logistics/distribution	735	47	24	7	78	10
Finance	719	22	16	1	39	18
Marketing	716	11	24	5	40	17
Strategic planning	677	34	23	6	63	14
Maintenance set-up	666	32	7		39	19
Material properties	569	28	3	7	38	20

Table 112

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 3

Category	State Response Total	Area 3 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	91	130	59	280	1
Management	1302	134	75	36	245	2
Management info. sys.	1296	106	77	35	218	4
Testing	1121	95	96	29	220	3
Communications	1053	103	46	22	171	6
Human resource dev.	1005	83	61	38	182	5
Safety/security	971	77	35	31	143	13
Sys. maintenance	925	85	55	15	155	9
Office adm.	859	86	56	13	155	10
Design	823	81	63	13	157	8
Health	813	88	26	6	120	19
Tech. sys. operators	805	39	47	42	128	18
Financial cost sys.	767	65	58	29	152	11
Machine operation	765	63	56	46	165	7
Logistics/distribution	735	77	53	13	143	14
Finance	719	78	48	17	143	15
Marketing	716	71	47	20	138	16
Strategic planning	677	68	64	15	147	12
Maintenance set-up	666	70	35	23	128	17
Material properties	569	46	45	12	103	20

Table 113

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 4

Category	State Response Total	Area 4 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	126	91	15	232	1
Management	1302	116	49	15	180	2
Management info. sys.	1296	100	52	17	169	5
Testing	1121	105	57	11	173	4
Communications	1053	105	26	5	136	7
Human resource dev.	1005	102	25		127	9
Safety/security	971	84	21	11	116	11
Sys. maintenance	925	69	32	11	112	12
Office adm.	859	81	20	1	102	15
Design	823	86	42	4	132	8
Health	813	71	11	4	86	19
Tech. sys. operators	805	102	64	12	178	3
Financial cost sys.	767	69	18	10	97	16
Machine operation	765	99	34	17	150	6
Logistics/distribution	735	51	26		77	20
Finance	719	61	21	6	88	18
Marketing	716	71	30	25	126	10
Strategic planning	677	57	42	7	106	13
Maintenance set-up	666	72	16	6	94	17
Material properties	569	72	32		104	14

In Table 113, technical system operators, machine operation and marketing took the place of safety/security, systems maintenance and office administration in area 4.

Table 114 represents the data from area 5. Health and financial cost systems replaced office administration and design in the top ten requested programs for area 5.

In Table 115, health replaced design for the top ten requested programs in area 6.

Table 116 represents the data from area 7. Technical systems operators replaced design in the top ten requested programs for area 7.

In Table 117, health and logistics/distribution replaced safety/security and design in area 8.

In Table 118, finance and marketing replaced communication and systems maintenance in the top ten requested programs for area 9.

Table 114

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 5

Category	State Response Total	Area 5 Some Need	Area 5 A Lot of Need	Area 5 Critical Need	Area 5 Area Total	Area 5 Area Rank
Process change	1594	90	54	49	193	1
Management	1302	70	69	18	157	3
Management info. sys.	1296	73	58	40	171	2
Testing	1121	55	57	26	138	4
Communications	1053	51	48	23	122	7
Human resource dev.	1005	64	50	15	129	6
Safety/security	971	65	48	23	136	5
Sys. maintenance	925	51	44	27	122	8
Office adm.	859	51	21	13	85	12
Design	823	41	16	11	68	15
Health	813	68	19	26	113	9
Tech. sys. operators	805	40	8	10	58	17
Financial cost sys.	767	49	58	3	110	10
Machine operation	765	33	14	7	54	18
Logistics/distribution	735	49	18	13	80	14
Finance	719	55	37	5	97	11
Marketing	716	46	15	1	62	16
Strategic planning	677	25	12	7	44	20
Maintenance set-up	666	33	21	29	83	13
Material properties	569	28	11	12	51	19

Table 115

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 6

Category	State Response Total	Area 6 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	112	83	41	236	1
Management	1302	119	76	14	209	3
Management info. sys.	1296	141	85	15	241	2
Testing	1121	86	52	27	165	9
Communications	1053	100	71	11	182	5
Human resource dev.	1005	106	65	7	178	6
Safety/security	971	114	56	24	194	4
Sys. maintenance	925	84	53	29	166	8
Office adm.	859	100	46	2	148	10
Design	823	77	40	18	135	11
Health	813	120	39	8	167	7
Tech. sys. operators	805	62	35	23	120	17
Financial cost sys.	767	77	40	7	124	16
Machine operation	765	69	42	14	125	14
Logistics/distribution	735	79	37	10	126	13
Finance	719	78	42	11	131	12
Marketing	716	77	39	8	124	15
Strategic planning	677	68	40	11	119	18
Maintenance set-up	666	68	31	5	104	19
Material properties	569	59	26	7	92	20

Table 116

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 7

Category	State Response Total	Area 7 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	80	72	28	180	1
Management	1302	65	56	4	125	5
Management info. sys.	1296	83	59	11	153	2
Testing	1121	60	41	8	109	9
Communications	1053	94	35	15	144	3
Human resource dev.	1005	74	31	16	121	6
Safety/security	971	68	39	25	132	4
Sys. maintenance	925	57	40	10	107	10
Office adm.	859	77	23	15	115	7
Design	823	57	38	5	100	11
Health	813	54	20	2	76	16
Tech. sys. operators	805	67	38	8	113	8
Financial cost sys.	767	44	23	9	76	17
Machine operation	765	42	33	7	82	14
Logistics/distribution	735	48	26	6	80	15
Finance	719	37	22	8	67	19
Marketing	716	48	22	17	87	13
Strategic planning	677	36	20	12	68	18
Maintenance set-up	666	43	37	8	88	12
Material properties	569	48	12	3	63	20

Table 117

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 8

Category	State Response Total	Area 8 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	45	37	4	86	1
Management	1302	47	12	2	61	3
Management info. sys.	1296	41	9	18	68	2
Testing	1121	28	14	9	51	6
Communications	1053	37	15	2	54	5
Human resource dev.	1005	25	14		39	7
Safety/security	971	25	7	3	35	12
Sys. maintenance	925	31	24	5	60	4
Office adm.	859	27	8	4	39	8
Design	823	19	4	1	24	20
Health	813	22	16		38	9
Tech. sys. operators	805	19	11	4	34	15
Financial cost sys.	767	29	3	3	35	13
Machine operation	765	10	13	2	25	19
Logistics/distribution	735	30	8		38	10
Finance	719	24	4	1	29	17
Marketing	716	19	10		29	18
Strategic planning	677	31	4		34	14
Maintenance set-up	666	24	6	3	33	16
Material properties	569	31	2	4	37	11

Table 118

The Order of the Twenty Categories by Response of Some Need, A Lot of Need and Critical Need for Programs in the State and Area # 9

Category	State Response Total	Area 9 Some Need	A Lot of Need	Critical Need	Area Total	Rank
Process change	1594	80	25	10	115	1
Management	1302	71	26	5	102	2
Management info. sys.	1296	52	32	12	96	3
Testing	1121	44	24	11	79	7
Communications	1053	49	12	6	67	13
Human resource dev.	1005	43	21	9	73	9
Safety/security	971	51	20	19	90	4
Sys. maintenance	925	23	35	1	59	17
Office adm.	859	51	22	8	81	6
Design	823	48	25	14	87	5
Health	813	29	31		60	15
Tech. sys. operators	805	27	23	18	68	12
Financial cost sys.	767	38	11	5	54	18
Machine operation	765	31	19	14	64	14
Logistics/distribution	735	40	28	2	70	11
Finance	719	57	10	7	74	8
Marketing	716	47	21	4	72	10
Strategic planning	677	29	10	11	50	19
Maintenance set-up	666	35	17	8	60	16
Material properties	569	27	8	6	41	20

Tables 119-127 present the data in a different format. The ranking of the categories on the state level by the number of companies indicating a need in a category can be compared to the total response ranking in the state. Also the number of companies in each area were ranked by category and their total responses in each of the twenty categories were ranked. For example, in Table 119, 351 companies of 519 surveyed indicated a need for management training, retraining or consulting and they chose the category, management, 1302 times which was the second highest program requested in the state. In area 1, 26 of 32 companies chose the category management which was the highest number of companies requesting any of the twenty categories in area 1. They also chose training, retraining or consulting in this category 89 times which was the second highest number of responses for any of the twenty programs for area 1. By looking at these tables, the number of companies per category and their responses can be compared on the state and area level.

Table 119

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 1 Company Total	Area 1 Rank	Area 1 Response Rank	Area 1 Response Total
Management	351	1302	2	26	1	2	89
Process change training	323	1594	1	25	2	1	106
Management info. sys.	316	1296	3	23	3	4	76
Human resource dev.	290	1005	6	19	8	8	61
Systems maintenance	269	925	8	22	4	7	64
Testing	262	1121	4	21	7	5	75
Communications	257	1053	5	22	5	3	77
Financial cost systems	245	767	13	22	6	10	54
Safety/security	245	971	7	15	15	11	51
Office administration	244	859	9	19	9	9	55
Finance	242	719	16	18	10	13	51
Marketing	234	716	17	13	18	19	38
Logistics/distribution	232	735	15	16	12	17	43
Design	227	823	10	17	11	12	51
Strategic planning	222	677	18	14	17	16	45
Machine operation	218	765	14	16	13	15	45
Tech. sys. operators	197	805	12	15	16	14	46
Maintenance and set-up	193	666	19	11	20	20	37
Health	176	813	11	16	14	6	70
Material properties	155	569	20	13	19	18	40
Total Companies Surveyed	519	18,181		32			1,174

Table 120

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 2 Company Total	Area 2 Rank	Area 2 Response Rank	Area 2 Response Total
Management	351	1302	2	37	1	2	134
Process change training	323	1594	1	34	2	1	166
Management info. sys.	316	1296	3	31	3	4	104
Human resource dev.	290	1005	6	27	5	6	95
Systems maintenance	269	925	8	27	6	8	80
Testing	262	1121	4	25	7	3	111
Communications	257	1053	5	24	8	5	100
Financial cost systems	245	767	13	19	13	13	65
Safety/security	245	971	7	22	11	11	74
Office administration	244	859	9	23	10	9	79
Finance	242	719	16	18	16	18	39
Marketing	234	716	17	18	17	17	40
Logistics/distribution	232	735	15	28	4	10	78
Design	227	823	10	22	12	12	69
Strategic planning	222	677	18	24	9	14	63
Machine operation	218	765	14	19	15	16	55
Tech. sys. operators	197	805	12	17	18	15	60
Maintenance and set-up	193	666	19	11	20	19	39
Health	176	813	11	19	14	7	83
Material properties	155	569	20	13	19	20	38
Total Companies Surveyed	519	18,181		49			1,572

Table 121

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 3 Company Total	Area 3 Rank	Area 3 Response Rank	Area 3 Response Total
Management	351	1302	2	57	1	2	245
Process change training	323	1594	1	48	7	1	280
Management info. sys.	316	1296	3	53	2	4	218
Human resource dev.	290	1005	6	46	8	5	182
Systems maintenance	269	925	8	41	10	9	155
Testing	262	1121	4	49	4	3	220
Communications	257	1053	5	42	9	6	171
Financial cost systems	245	767	13	49	5	11	152
Safety/security	245	971	7	33	17	13	143
Office administration	244	859	9	40	12	10	155
Finance	242	719	16	49	6	15	143
Marketing	234	716	17	50	3	16	138
Logistics/distribution	232	735	15	41	11	14	143
Design	227	823	10	38	15	8	157
Strategic planning	222	677	18	40	13	12	147
Machine operation	218	765	14	39	14	7	165
Tech. sys. operators	197	805	12	30	18	18	128
Maintenance and set-up	193	666	19	37	16	17	128
Health	176	813	11	27	19	19	120
Material properties	155	569	20	26	20	20	103
Total Companies Surveyed	519	18,181		80			3,293

Table 122

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 4 Company Total	Area 4 Rank	Area 4 Response Rank	Area 4 Response Total
Management	351	1302	2	49	1	2	180
Process change training	323	1594	1	46	2	1	232
Management info. sys.	316	1296	3	46	3	5	169
Human resource dev.	290	1005	6	39	4	9	127
Systems maintenance	269	925	8	33	12	12	112
Testing	262	1121	4	38	6	4	173
Communications	257	1053	5	32	14	7	136
Financial cost systems	245	767	13	32	15	16	97
Safety/security	245	971	7	34	11	11	116
Office administration	244	859	9	31	16	15	102
Finance	242	719	16	33	13	18	88
Marketing	234	716	17	36	7	10	126
Logistics/distribution	232	735	15	30	17	20	77
Design	227	823	10	35	10	8	132
Strategic planning	222	677	18	36	8	13	106
Machine operation	218	765	14	39	5	6	165
Tech. sys. operators	197	805	12	35	9	3	178
Maintenance and set-up	193	666	19	26	18	17	94
Health	176	813	11	18	20	19	86
Material properties	155	569	20	24	19	14	104
Total Companies Surveyed	519	18,181		76			2,600

Table 123

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 5 Company Total	Area 5 Rank	Area 5 Response Rank	Area 5 Response Total
Management	351	1302	2	40	1	3	157
Process change training	323	1594	1	38	3	1	193
Management info. sys.	316	1296	3	39	2	2	171
Human resource dev.	290	1005	6	36	4	6	129
Systems maintenance	269	925	8	32	5	8	122
Testing	262	1121	4	28	8	4	138
Communications	257	1053	5	29	6	7	122
Financial cost systems	245	767	13	28	9	10	110
Safety/security	245	971	7	29	7	5	136
Office administration	244	859	9	24	10	12	85
Finance	242	719	16	24	11	11	97
Marketing	234	716	17	17	16	16	62
Logistics/distribution	232	735	15	21	14	14	80
Design	227	823	10	21	15	15	68
Strategic planning	222	677	18	16	17	20	44
Machine operation	218	765	14	14	19	18	54
Tech. sys. operators	197	805	12	16	18	17	58
Maintenance and set-up	193	666	19	23	13	13	83
Health	176	813	11	23	12	9	113
Material properties	155	569	20	14	20	19	51
Total Companies Surveyed	519	18,181		56			2,073

Table 124

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 6 Company Total	Area 6 Rank	Area 6 Response Rank	Area 6 Response Total
Management	351	1302	2	59	1	3	209
Process change training	323	1594	1	50	4	1	236
Management info. sys.	316	1296	3	52	2	2	241
Human resource dev.	290	1005	6	51	3	6	178
Systems maintenance	269	925	8	44	7	8	166
Testing	262	1121	4	37	10	9	165
Communications	257	1053	5	45	6	5	182
Financial cost systems	245	767	13	36	15	16	124
Safety/security	245	971	7	48	5	4	194
Office administration	244	859	9	37	11	10	148
Finance	242	719	16	38	8	12	131
Marketing	234	716	17	37	13	15	124
Logistics/distribution	232	735	15	37	12	13	126
Design	227	823	10	38	9	11	135
Strategic planning	222	677	18	37	14	18	119
Machine operation	218	765	14	34	17	14	125
Tech. sys. operators	197	805	12	27	20	17	120
Maintenance and set-up	193	666	19	32	18	19	104
Health	176	813	11	35	16	7	167
Material properties	155	569	20	30	19	20	92
Total Companies Surveyed	519	18,181		87			3,086

Table 125

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 7 Company Total	Area 7 Rank	Area 7 Response Rank	Area 7 Response Total
Management	351	1302	2	32	2	5	125
Process change training	323	1594	1	34	1	1	180
Management info. sys.	316	1296	3	31	3	2	153
Human resource dev.	290	1005	6	31	4	6	121
Systems maintenance	269	925	8	29	6	10	107
Testing	262	1121	4	26	10	9	109
Communications	257	1053	5	27	8	3	144
Financial cost systems	245	767	13	25	12	17	76
Safety/security	245	971	7	31	5	4	132
Office administration	244	859	9	27	9	7	115
Finance	242	719	16	26	11	19	67
Marketing	234	716	17	28	7	13	87
Logistics/distribution	232	735	15	24	15	15	80
Design	227	823	10	22	17	11	100
Strategic planning	222	677	18	23	16	18	68
Machine operation	218	765	14	25	13	14	82
Tech. sys. operators	197	805	12	25	14	8	113
Maintenance and set-up	193	666	19	20	18	12	88
Health	176	813	11	15	19	16	76
Material properties	155	569	20	15	20	20	63
Total Companies Surveyed	519	18,181		49			2,086

Table 126

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 8 Company Total	Area 8 Rank	Area 8 Response Rank	Area 8 Response Total
Management	351	1302	2	16	4	3	61
Process change training	323	1594	1	21	1	1	86
Management info. sys.	316	1296	3	17	3	2	68
Human resource dev.	290	1005	6	16	5	7	39
Systems maintenance	269	925	8	20	2	4	60
Testing	262	1121	4	15	7	6	51
Communications	257	1053	5	15	8	5	54
Financial cost systems	245	767	13	13	9	13	35
Safety/security	245	971	7	12	11	12	35
Office administration	244	859	9	16	6	8	39
Finance	242	719	16	10	18	17	29
Marketing	234	716	17	12	15	18	29
Logistics/distribution	232	735	15	12	12	10	38
Design	227	823	10	12	14	20	24
Strategic planning	222	677	18	12	16	14	35
Machine operation	218	765	14	9	19	19	25
Tech. sys. operators	197	805	12	12	17	15	34
Maintenance and set-up	193	666	19	13	10	16	33
Health	176	813	11	12	13	9	38
Material properties	155	569	20	8	20	11	37
Total Companies Surveyed	519	18,181		30			850

Table 127

The Order of the Twenty Categories Requested by the Companies for the State and Area of Ohio and the Total Responses

Category	State Company Total	State Response Total	State Rank	Area 9 Company Total	Area 9 Rank	Area 9 Response Rank	Area 9 Response Total
Management	351	1302	2	35	1	2	102
Process change training	323	1594	1	27	2	1	115
Management info. sys.	316	1296	3	24	6	3	96
Human resource dev.	290	1005	6	25	5	9	73
Systems maintenance	269	925	8	21	12	17	59
Testing	262	1121	4	23	7	7	79
Communications	257	1053	5	21	13	13	67
Financial cost systems	245	767	13	21	14	18	54
Safety/security	245	971	7	21	15	4	90
Office administration	244	859	9	27	3	6	81
Finance	242	719	16	26	4	8	74
Marketing	234	716	17	23	10	10	72
Logistics/distribution	232	735	15	23	8	11	70
Design	227	823	10	22	11	5	87
Strategic planning	222	677	18	20	16	19	50
Machine operation	218	765	14	23	9	14	64
Tech. sys. operators	197	805	12	20	17	12	68
Maintenance and set-up	193	666	19	15	18	16	60
Health	176	813	11	11	19	15	60
Material properties	155	569	20	12	20	20	41
Total Companies Surveyed	519	18,181		60			1,462

Table 128

The Top Five Topic Areas Indicated by the 519 Companies for their Management, Supervisory, Technical Support Employeees and Other Employees

Management	Supervisory	Technical Support	Other Employees
Process change	Management	Process change	Process change
Mgmt.info.sys.	Process change	Human res.dev.	Machine op.
Management	Mgmt.info.sys.	Testing	Tech.sys.op.
Human res.dev.	Human res.dev.	Sys.maintenance	Sys.maintenance
Strategic pln.	Communication	Mgmt.info.sys.	Maint.set-up

Table 128 represents the top five categories chosen by the companies for training, retraining or consulting for their managers, supervisors, technical support employees and other employees. Process change was the first choice of all but supervisory employees and it was the second choice for them. As might be expected, managerial concerns were the top choices for both management and supervisory employees. Technical support employees had testing and systems maintenance in the number three and four positions. The training, retraining and consulting needs for other employees included machine operations, technical systems operators and maintenance and set-up. The five choices for the employees followed the duties expected of them.

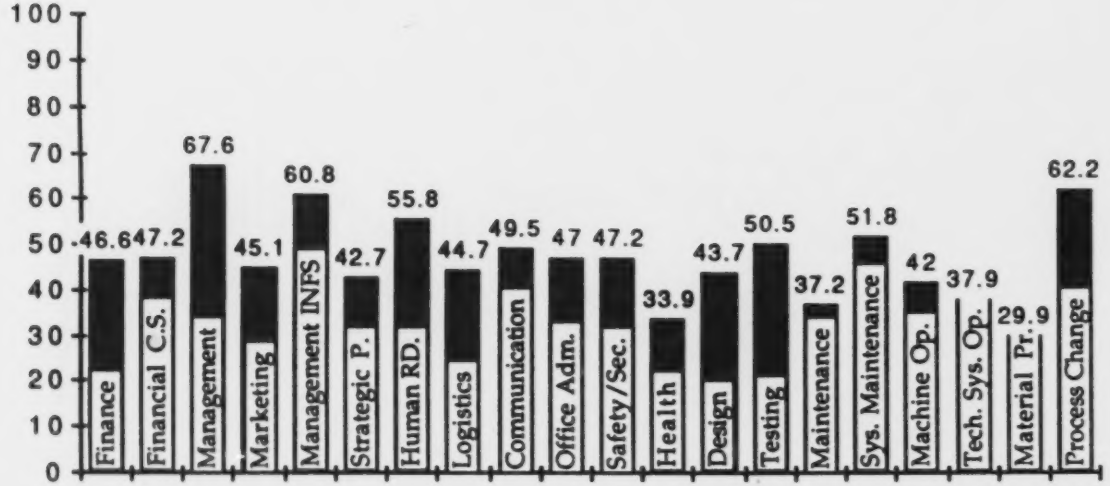
The final set of tables will graphically represent the percentage of companies in each area and the state that responded

from some need to critical need for programs in the twenty categories listed. The number of small manufacturing companies located in each area has been identified along with the number of companies surveyed.

Table 129 includes the State of Ohio data with 519 companies surveyed of the 8,429 located in the state.

Tables 130-138 report the data obtained in each area of the state by the percentage of companies that selected the various categories and the total number of companies located in that area.

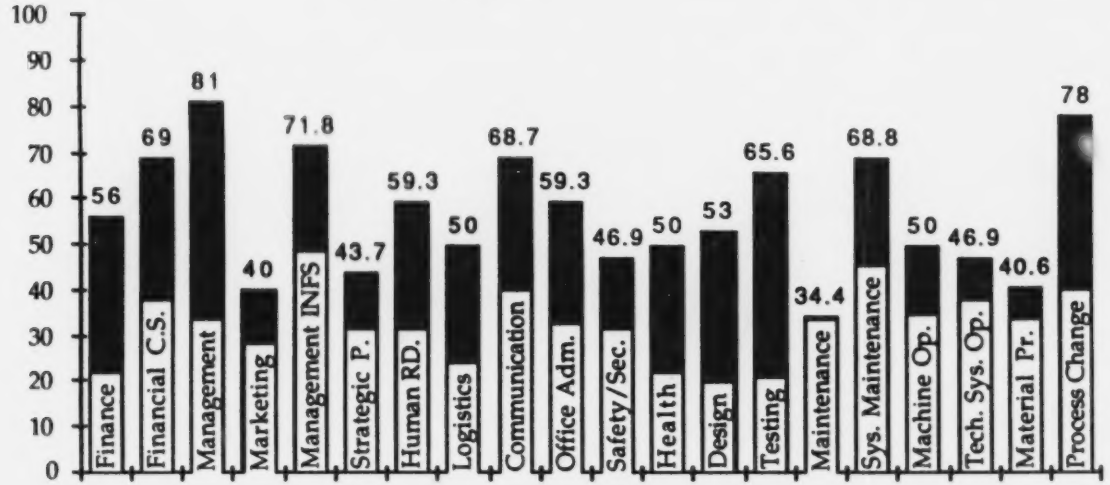
State Of Ohio Percentages



519 of the 8489 small manufacturing companies located in the State of Ohio were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 129

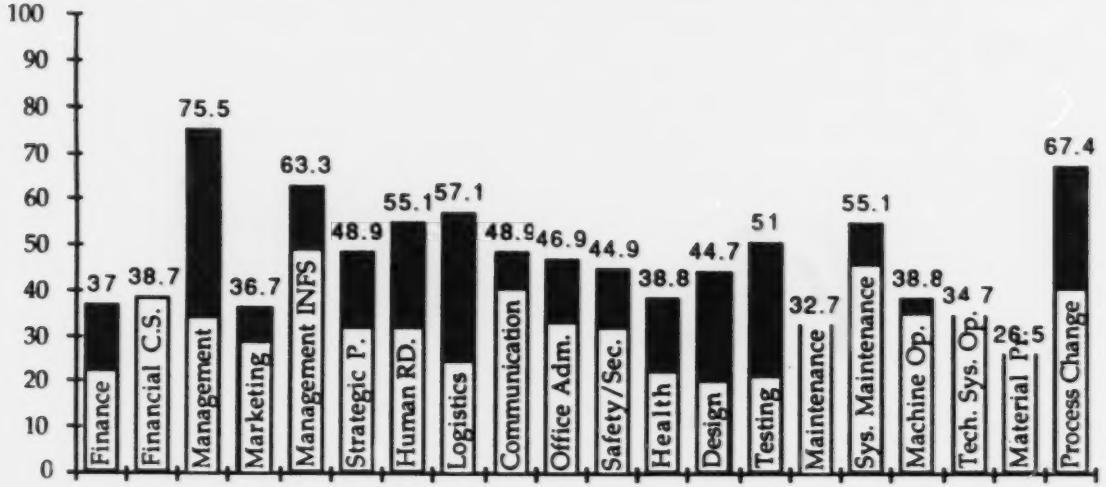
Region #1 Percentages



32 of the 401 small manufacturing companies located in Region #1 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 130

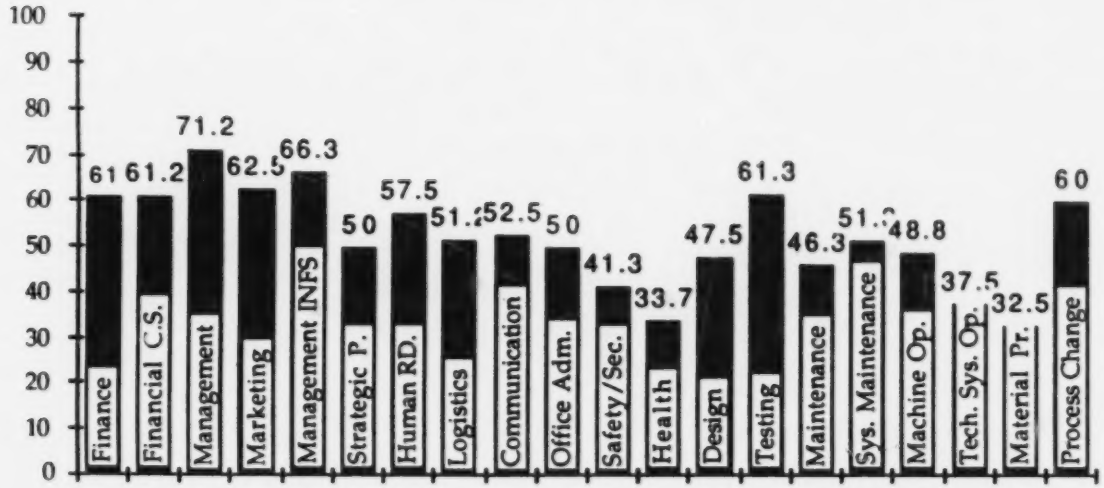
Region #2 Percentages



49 of the 870 small manufacturing companies located in Region #2 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 131

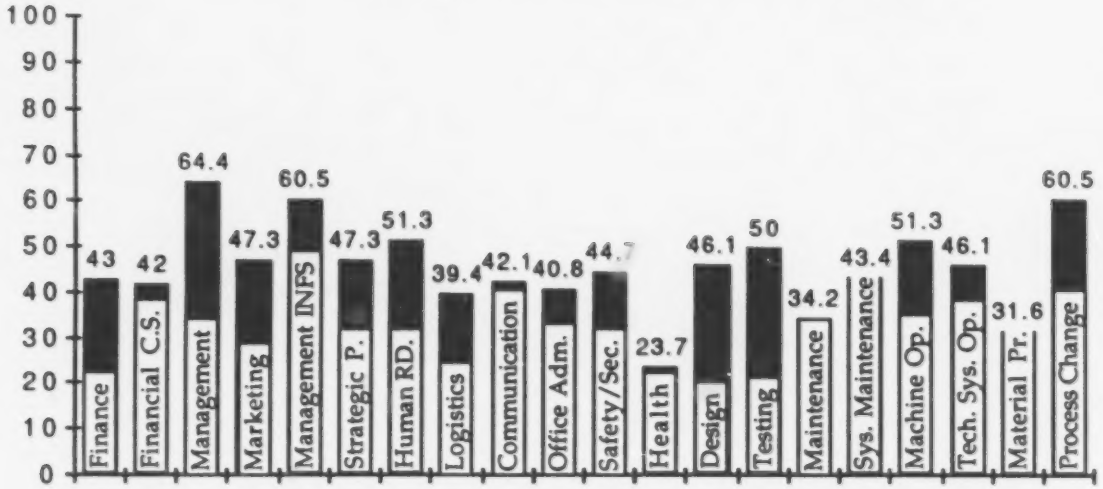
Region #3 Percentages



80 of the 2427 small manufacturing companies located in Region #3 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 132

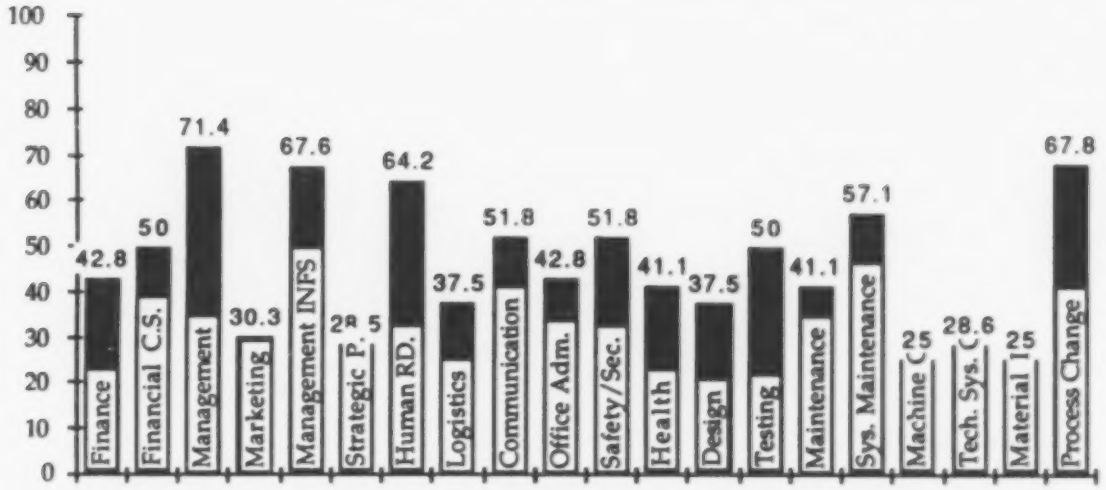
Region #4 Percentages



76 of the 1193 small manufacturing companies located in Region #4 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 133

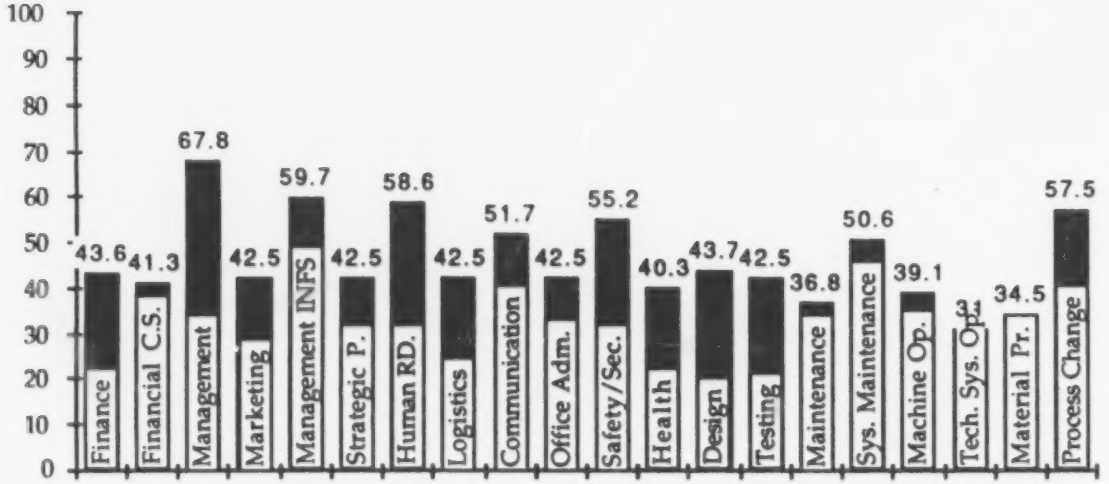
Region #5 Percentages



56 of the 969 small manufacturing companies located in Region #5 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 134

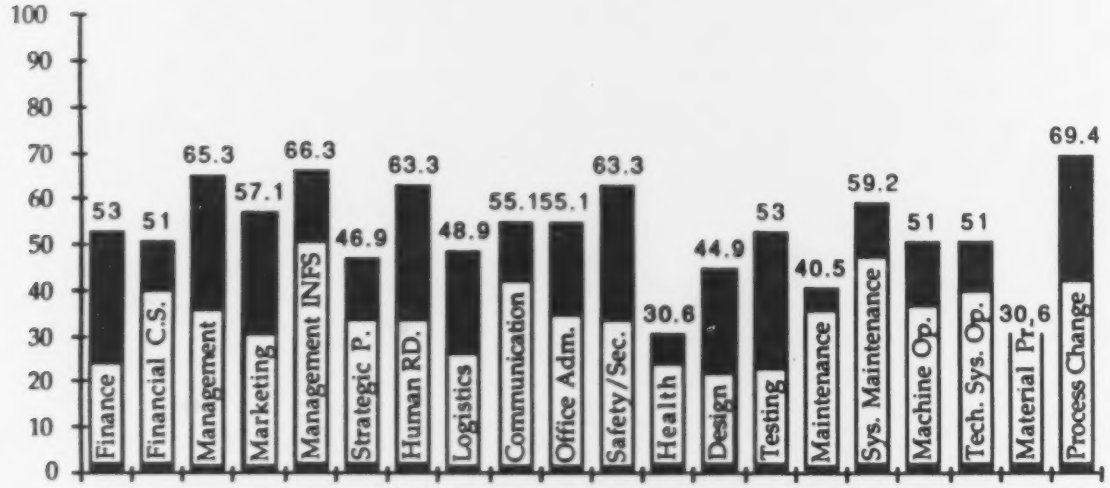
Region #6 Percentages



87 of the 1152 small manufacturing companies located in Region #6 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 135

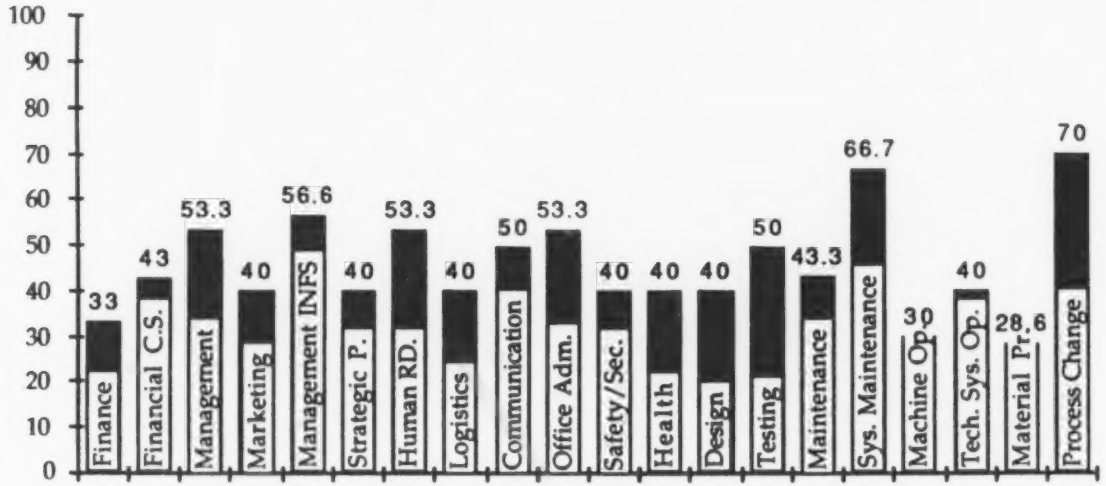
Region #7 Percentages



49 of the 910 small manufacturing companies located in Region #7 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 136

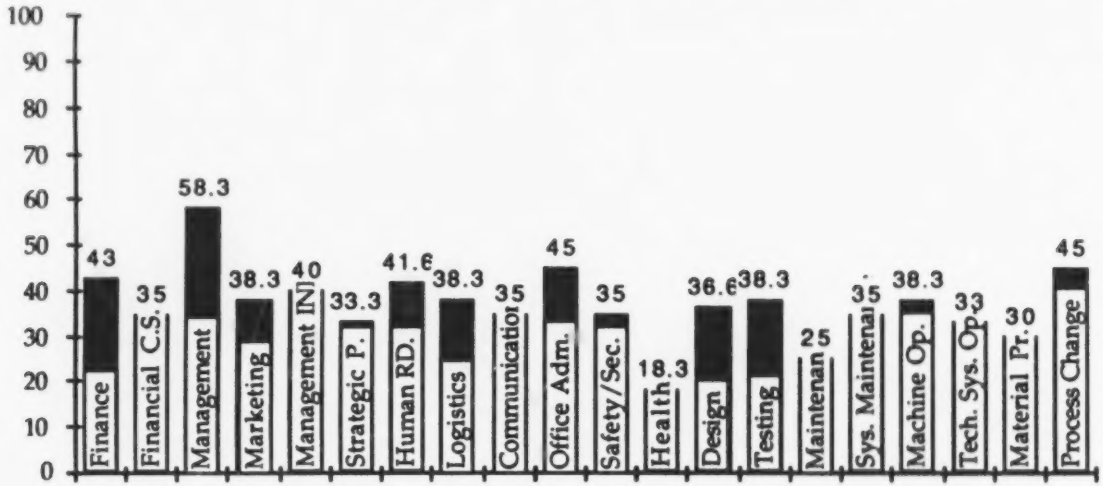
Region #8 Percentages



30 of the 246 small manufacturing companies located in Region #8 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 137

Region #9 Percentages



60 of the 301 small manufacturing companies located in Region #9 were surveyed. This graph indicates the percentage of companies that expressed some to critical need for programs in the various topic areas.

Table 138

Technical Support Needs

The top six technical support needs indicated by the 519 companies surveyed were: statistical process control which was first by a large margin, hazardous materials handling, computer assisted design, just in time, computer systems analysis, and materials testing. The companies were asked to indicate what other services of interest the colleges or universities could provide. The top five services indicated were: co-op students, screening for employees, retirement planning, audio video support and technical writing.

Recommendations

The following recommendations are presented:

1. The training, retraining and consulting program needs of small manufacturing companies in the State of Ohio have been identified. Two year campuses in each of the nine regions should develop programs designed to meet the identified needs of small manufactureres in Ohio.
2. From the data obtained, the most requested program topics were as follows: for training, process change and management information systems; for retraining, process change and management; for consulting, process change and management information systems. Although the total number of managers, supervisors, technical support employees

and other employees for which these programs were requested is not known, sufficient data exists to indicate that these topics should be given serious consideration for program development.

3. All facets of the two year campuses should be involved in the development, marketing, and evaluation of the programs identified in this study. This is essential to the development of quality programs. Departments such as engineering technology, communications, business, and computer science should be informed of the results of this study thus allowing for a systematic, integrated approach to program development, marketing and evaluation. They then should become an integral part of the development of the needed programs and the marketing of these programs.

4. The two year campuses should concentrate on the development of technical support programs in the areas of statistical process control, hazardous materials handling, computer design, just in time, and a plan for co-op students as well as screeing for employees and retirement planning. Meetings with organizations requesting these programs should be held to ascertain specific program content designed to meet their needs.

5. Initial steps have been taken by the two year campuses to establish linkages with local small manufacturing companies. This liaison should be strengthened in order for both the institutions and the organizations to communicate and cooperate effectively to meet the various educational needs of the local community. This interchange will benefit the organizations, the institutions, and the community.
6. This research was a study in a dynamic field and should be repeated and modified. This study should be replicated for other larger businesses and industries in order for the two year campuses to develop programs that meet their identified needs. When this is accomplished, the liaison between the campuses and the communities they serve will be strengthened.

APPENDICES

APPENDIX A

DEFINITIONS

Question Numbers And Definitions From the Survey

22. FINANCING: Financial planning and control systems, determining level of capital funding, where to obtain financing, and procedures for generating financing, how to analyze financial statements, ration analysis, financial analysis for the small firm.

23. FINANCIAL AND COST SYSTEMS: Inventory control, capital projects approval system, standard and direct cost systems. Accounting, developing profit and loss statements, balance sheets, cash flow schedules. Auditing, financial forecasting, leveraging your firm, horizontal statement analysis.

24. MANAGEMENT: Organization of work, organized relationships necessary, supervisory techniques, delegation process, to be communicated and understood.

25. MARKETING: As it applies to your business success, how to develop opportunity strategies, target market, establish pricing policy, determine product mix, distribute most efficiently and economically, promote successfully and to

obtain, research, product sampling, consumer behavior and packaging assistance, demographics, and market testing.

26. MANAGEMENT INFORMATION SYSTEMS: Relationship to the computer, how and what to include, data processing, management computer report systems, data transmission and reception.

27. STRATEGIC PLANNING: Develop your strategic plan. How? Who? When? Small businesses need a strategic plan.

28. HUMAN RESOURCE DEVELOPMENT: Personnel policy, performance appraisal, evaluation, retirement planning, succession planning, position charts, and job descriptions.

29. LOGISTICS/DISTRIBUTION: Traffic, materials management, purchasing, material handling.

30. COMMUNICATION: Interview techniques, inter-office, with customers, phone techniques, house organs, newspapers, public relations, electronic mail.

31. OFFICE ADMINISTRATION: Word processing, business English, writing, time management and general office procedures.

32. SAFETY/SECURITY: Physical security, computer security, OSHA requirements.

33. HEALTH: Wellness program, conditioning, physical fitness.

34. DESIGN: Design of new products, shop design, packaging design, plant layout, and architectural drafting, pattern and mold making, electrical drafting, mechanical drafting, technical illustrating, etc.

35. TESTING: Product inspection and measurement, stress testing, conduction, chemical properties and bacteriological testing, quality control, new product or process testing, etc.

36. MAINTENANCE AND SET-UP: Carpentry, and masonry repair, operating equipment, cleaning and lubrication, welding, machine set-up operators, etc.

37. SYSTEMS MAINTENANCE: Repair of electrical, mechanical, HVAC pneumatic and hydraulic systems, repair of robotics, CNC, computer, laser/fiber optic and other electronic components and equipment, programmable control trouble shooting, etc.

38. MACHINE OPERATION: Lathes, extruders, cutters, grinders, assemblers, fabricators, painting, glazing and coating operators, drill and other pressing operators, machine welding and soldering operators, etc.

39. TECHNICAL SYSTEMS OPERATORS: CNC operators, robotics operators, computer-assisted drafters, laser optic cutters, heat chemical and electronic sensor operators, etc.

40. MATERIAL PROPERTIES: Rubber, plastics, chemicals and their reactions, ceramics, metallurgy and other ore materials, wood, food, textile and other agricultural products, etc.

41. PROCESS CHANGE TRAINING: Statistical process control (SPC), just-in-time (JIT), computer-integrated manufacturing (CIM), hazardous material handling, quality control, etc.

Small Manufacturing Company Survey

_____ State of Ohio Area 1, 2, 3, 4, 5, 6, 7, 8, 9

_____ Survey No.

Interviewer:_____

Date of Interview:_____

Length of Interview:_____

County:_____

City:_____

Name, title and phone of respondent:_____

_____

Company S.I.C. code number.

_____

Small Manufacturing Company Survey

_____ Survey No. _____ SIC Code number

1. How many employees at this location are on your payroll?

_____ (1) 10-25, (2) 26-50, (3) 51-100, (4) 101-200, (5) 201-250, (6) 250+

2. Number of employees at this organization five years ago?

_____ (1) 1-25, (2) 25-50, (3) 51-100, (4) 101-200, (5) 201-250, (6) 0

3. What is the percentage of change?
_____ (1) reduction, (2) 0%, (3) 25%, (4) 50%, (5) 75%, (6) 100+%

4. If the number of employees changed, why? (Check two at most)

1._____	technological changes	7. _____	increase in sales
2._____	improved management	8. _____	renovation/expansion
3._____	slow growth/decr.demand	9. _____	new products/services
4._____	increased competition	10. _____	entered new markets
5._____	business did not exist	11. _____	more subcontracting
6._____	improved efficiency	12. _____	unable to meet tech. change

5. What is the projected number of employees in your organization in the next five years

_____ (1) 1-25, (2) 26-50, (3) 51-100, (4) 101-200, (5) 201-250 (6) 250+

6. What is the percentage of change expected?

_____ (1) reduction, (2) 0%, (3) 25%, (4) 50%, (5) 75%, (6) 100+%

7. If an employment change is expected, why? (Check two at most)

1._____	technological changes	7. _____	increase in sales
2._____	improved management	8. _____	renovation/expansion
3._____	slow growth/decr.demand	9. _____	new products/services
4._____	increased competition	10. _____	entered new markets
5._____	business did not exist	11. _____	more subcontracting
6._____	improved efficiency	12. _____	unable to meet tech. change

8. If a reduction of employment is anticipated will you need an outplacement program for any displaced employees?

_____ (1) Yes, (2) No

9. What percentage of your workforce is unionized?

_____ (1) 1-25%, (2) 26-50%, (3) 51-75%, (4) 76-100%, (5) 0

10. Is your organization part of a multi-unit firm?

_____ (1) Yes, (2) No

11. Where is your company's headquarters located?

City _____ State _____

12. What are the major products of your organization?

_____ _____

_____ _____

13. Will you be making significant capital investment which may have an impact on the current work force in the next five years? (i.e. install robots)

_____ (1) Yes, (2) No

If yes, will you need a retraining program for these employees?

_____ (1) Yes, (2) No

If yes, will you need an outplacement program for any displaced employees?

_____ (1) Yes, (2) No

14. There are major technological innovations on the horizon in industry that might affect your organization. Do you think any of the following inovations will impact on your company? (See attached Glossary for definitions)

If yes, what are they? (Please check all that apply)

	Yes	No	Not Sure	Need More Information
1. Fabrication and assembly	_____	_____	_____	_____
2. Information & control/quality	_____	_____	_____	_____
3. Materials handling	_____	_____	_____	_____
4. Product design	_____	_____	_____	_____
5. Production planning/Engineering	_____	_____	_____	_____
6. CAD, CAM, (CIM), CAE	_____	_____	_____	_____
7. Vision/inspection systems	_____	_____	_____	_____
8. Biotechnology	_____	_____	_____	_____
9 Waste management	_____	_____	_____	_____
10.Organizational development	_____	_____	_____	_____
11.Manufacturing Mgmt. (strategy, team mgmt. & organization, business practices)	_____	_____	_____	_____

15. Does your company have a tuition reimbursement program?

_____ (1) Yes, (2) No

If yes, what percentage of cost does this reimbursement cover?

_____ (1) 25%, (2) 50%, (3) 75%, (4) 100%

16. Do you have a higher turnover rate with your entry-level employees than you would like to have?

_____ (1) Yes, (2) No

17. Do you believe that prior training in a certain field would reduce this turnover rate?

_____ (1) Yes, (2) No If yes what type of training? _____

18. Does your company currently have a formal structure to address employee training?

_____ (1) Yes, (2) No

19. Would you describe the training needed by your employees as being---? (Check all that apply with and X)

1. _____ College credit
2. _____ Basic studies
3. _____ On the job training
4. _____ Custom training
5. _____ Apprentice training

20. Would you consider a cooperative arrangement with a college or university to provide instructional programs for your current employees?

1. _____ (1) Yes, (2) No (3) Maybe

If yes or maybe what do you consider a convenient time?

2. _____ (1) Morning, (2) Afternoon, (3) Evening

If yes or maybe would you want the course on (1) Plant site, or

3. _____ (2) at the college, (3) a netural site?

21. What additional <u>incentives</u>, if any, does your company offer your employees in order that they may pursue further education? (check all appropriate with an X)

1. _____ Work-release
2. _____ Salary wage incentive
3. _____ Increased leadership role
4. _____ Child care
5. _____ Use of company equipment
6. _____ Mentorships/personal support
7. _____ Job security

The following is a list of areas where training, retraining, or consulting activities might be needed. Each item listed is a broad area that affects business. Please indicate your need for training, retraining, and consulting, in the area listed for management, supervisors, technical support (i.e. skill trades, data processing, office support), or other employees (i.e. production, clerical, semi-skilled workers).

1.....2.....3.....4.....5

No need	Little need	Some need	A lot of need	Critical need

22. FINANCING: financial planning and control systems, determining level of capital funding, where to obtain financing, and procedures for generating financing, how to analyze financial statements, ratio analysis, financial analysis for the small firm.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

23. FINANCIAL AND COST SYSTEMS: Inventory control, capital projects approval system, standard and direct cost systems. Accounting, developing profit and loss statements, balance sheets, cash flow schedules. Auditing, financial forecasting, leveraging your firm, horozontal statement analysis.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

24. MANAGEMENT: organization of work, organized relationships necessary, supervisory techniques, delegation process, to be communicated and understood.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

25. MARKETING: as it applies to your business success, how to develop opportunity strategies, target market, establish pricing policy, determine product mix, distribute most efficiently and economically, promote successfully and to obtain, research, product sampling, consumer behavior and packaging assistance, demographics, and market testing.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

26. MANAGEMENT INFORMATION SYSTEMS: relationship to the computer, how and what to include, data processing, management computer report systems, data transmission and reception.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

27. STRATEGIC PLANNING: Develop your strategic plan. How? Who? When? Small businesses need a strategic plan.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

28. HUMAN RESOURCE DEVELOPMENT: Personnel policy, performance appraisal, evaluation, retirement planning, succession planning, position charts, and job descriptions.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

29. LOGISTICS/DISTRIBUTION: traffic, materials management, purchasing, material handling.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

30. COMMUNICATION: interview techniques, inter office, with customers, phone techniques, house organs, newspapers, public relations, electronic mail.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

31. OFFICE ADMINISTRATION: Word processing, Business English, Writing, time management and general office procedures,

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

32. SAFETY/SECURITY: physical security, computer security, OSHA requirements.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

33. HEALTH: wellness program, conditioning, physical fitness.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

34. DESIGN: design of new products, job shop design, packaging design, plant layout and architectural drafting, pattern and mold making, electrical drafting, mechanical drafting, technical illustrating, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

35. TESTING: product inspection and measurement, stress testing, conduction, chemical properties and bacteriological testing, quality control, new product or process testing, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

36. MAINTENANCE AND SET-UP: carpentry, and masonry repair, operating equipment cleaning and lubrication, welding, machine set-up operators, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

37. SYSTEMS MAINTENANCE: repair of electrical, mechanical, HVAC, pneumatic and hydraulic systems, repair of robotics, CNC, computer, laser/fiber optic and other electronic components and equipment, programmable control trouble shooting, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

38. MACHINE OPERATION: lathes, extruders, cutters, grinders, assemblers, fabricators, painting, glazing and coating operators, drill and other pressing operators, machine welding and soldering operators, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

39. TECHNICAL SYSTEMS OPERATORS: CNC operators, robotics operators, computer-assisted drafters, laser optic cutters, heat chemical and electronic sensor operators, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

40. MATERIAL PROPERTIES: rubber, plastics, chemicals and their reactions, ceramics, metallurgy and other ore materials, wood, food, textile and other agricultural products, etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

41. PROCESS CHANGE TRAINING: statistical process control (SPC), just-in-time (JIT), computer-integrated manufacturing (CIM), hazardous material handling, quality control. etc.

1.....2.....3.....4.....5
No need Critical

	Training	Retraining	Consulting
1. Management	_____	_____	_____
2. Supervisors	_____	_____	_____
3. Technical support	_____	_____	_____
4. Other employees	_____	_____	_____

Would you want a custom designed program?

_____ (1) Yes, (2) No

Would you want to enroll employees in an existing course at a local college?

_____ (1) Yes, (2) No

42. Would you be interested in the college providing the technical support for specific problem areas listed below? (Please check all that apply)

1. ___ Chemical analysis
2. ___ Computer system analysis
3. ___ Reading assessment
4. ___ Math assessment
5. ___ Hazardous materials
6. ___ Materials testing
7. ___ Statistical proc./control
8. ___ Crisis management
9. ___ Computer assist. design
10. ___ Programable logic control
11. ___ Geometric demens/ toleranceing
12. ___ Just in time
13. ___ Injection molding
14. ___ Fiberoptics
15. ___ Robotics

43. What other services might you be interested in for your employees?

1. ___ Audio/video support
2. ___ Screening for employees
3. ___ Use of college equipment
4. ___ Retirement planning
5. ___ Career planning
6. ___ Data/lit. search
7. ___ Credit for life experience
8. ___ Procurement service
9. ___ Co-op students
10. ___ Faculty internship/exchange
11. ___ Technical writing

44. Will you have need in the future for management, supervisory, or employee training programs?

_____ (1) Yes, (2) No

45. How are your current needs in the areas of training, retraining, consulting, education, and technical support being handled?

1. _____ 2 yr. college/university
2. _____ Vendor training
3. _____ Management consultant firms
4. _____ Internally
5. _____ Proprietary school
6. _____ Vocational high school

46. Would you like additional information on those educational programs that would be beneficial to your employees? (Please specify)

1.....2.....3.....4.....5
strongly uninterested undecided interested strongly
uninterested interested

47. Please indicate the three top priority programs you would like to establish for your employees, and how many employees are involved?

	Programs	Number of Employees
1.	_____	
2.	_____	
3.	_____	

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GLOSSARY

FABRICATION AND ASSEMBLY

Parts fabrication includes all piece-making processes, e.g., machining, casting, molding, stamping, forming, welding, etc. Flexible machining systems and press operations, internal mold release, machine diagnostics, n/c model and pattern machining, near net shape casting and forging.

Assembly comprises the joining together of parts and/or sub-assembly at work stations which include people, robots, fixed automation, conveyors, feeders and sensors: AGVS assembly pallets, automated feed and orienting, machine vision/machine intelligence, Modular assembly.

INFORMATION AND CONTROL/QUALITY

Information and control systems monitor factory operations: computerized maintenance control systems, facilities monitoring and control, information display, inventory monitoring, production monitoring.

Total quality management and technology that is effective in the appraisal process including feedback processes to information systems: Automated X-Ray inspection, coating thickness measurement, machine vision assembly verification, machine gauging, material identificaiton.

MATERIAL HANDLING

Systems move and store material and can consist of AGVS AS/RS, bar codes, robots and vision systems: AGVS, Automated storage and Automated Retrieval, Bar code Identification, Material identification, Count verification.

PRODUCT DESIGN

The initial input to design consists of criteria, guidelines, tolerances, assembly and manufacturing consideration. Initial or conceptual design may be analyzed and optimization requires large or super-computers: CAD/CAM Graphics Systems, computerized data acquisition and analysis, finite element analysis and modeling.

PRODUCTION PLANNING

Short range production planning utilizes existing capacity to manufacture products and meet delivery schedules. It includes plant layout, simulation analysis, line balancing, and production scheduling. Long range planning assures that there will be adequate capacity to satisfy the forecasted future demand for products and incorporates group technology, process planning, capacity planning, make/buy analysis, and facilities planning. Technologies can include production scheduling, computer graphics, plant layout, corporate planning system, functional modeling, machine load planning, material requirements planning, project management systems, tool room reporting and control, training system for plant personnel.

PRODUCTION ENGINEERING

Designing and manufacturing dies, tools, fixtures and computer-generated machine programs necessary to adapt the manufacturing facility to the production of the specific product. Technologies can include 3-axis and mill surface machining, computer aided process planning, die design, wire frame, die layout, die development, mold design and analysis.

CAD, CAM, CAE (CIM)

Computer-Aided Design, Computer-Aided Manufacturing, Computer-Aided Engineering, Computer-Integrated Manufacturing.

VISION/INSPECTION SYSTEMS

This area focuses on technology that is effective in the appraisal process. Technologies included Automated X-Ray inspection, cost of quality analysis, calibration procedures, infrared images, etc.

BIOTECHNOLOGY

Bio-processing and genetic engineering.

WASTE MANAGEMENT

Hazardous materials reduction/substitution, treatment and disposal, waste minimization, recycling and reclamation techniques.

ORGANIZATIONAL DEVELOPMENT

Traditional business education experience. Technology examples included are accounting, purchasing planning and information gathering, personnel--including union and contract negotiating, work force selection and other such activities.

MANUFACTURING MANAGEMENT

Strategic issues include automation, flexible integration, computer integration, top down planning, bottom up commitment and product life cycles, etc.. Team management issues, project planning and pre-production, personnel management, cross-divisional relations. Business practices can include purchasing, Just-In-Time Inventory, self-inspected quality, cost accounting, performance measurement criteria, and consumer/customer characteristics.